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ARTICLE I.

TREATMENT OF PAIN.

BY JAMES MAUGHAN, M. D.,. L. R. C. P., M. R. C. S.

[A paper read before the Students' Society of the National Dental College.

Mr. President and Gentlemen:—The subject I have chosen for discussion is one that will commend itself at once to the humanitarian and the scientific instincts of all here to-night. In putting my thoughts together, I shall adhere as nearly as I can to the dental aspect of the question, and so invite your kindly criticism.

The treatment of pain must be premised by a word or two as to its pathology. What has baffled the sorcerers and philosophers of old still baffles the neurologists of to-day, and they are unable to state clearly in so many words, or to demonstrate practically to sufferers or non-sufferers, the true pathology of pain. That there is an invisible and subtle something passing along sensory nerves, and that the consciousness must be in unbroken connection with such nerves are hypotheses that all must admit. And, moreover, whatever the impalpable something may be in its essence, we can go one step further, and assert that it is *always* associated with degenerative changes and lowered vitality in the nerve itself. If we cannot formulate in exact terms the real nature of pain, we are equally wanting in an instrument by which we can perceive its presence and measure its intensity.

Gentlemen, an immortal name awaits the one among you who will invent an æsthesiometer and give to the world a means of detecting instantly the tricks of a malingerer, or of diagnosing a case of hysteria rapidly and easily. In byegone days a man was bled because he was living at too fast a rate; his chest was cupped for a disease exhausting enough in itself. Aconite and antimony, both powerful depressants, to say nothing of mercury with its hydra-headed sequelæ; were then pretty active in the market. The touch-stone of the pathology of the day was that organs at times took on an over-action or excess of function, and the recognised and orthodox treatment was to check such excess.

Mark the logic and pathology in a given case: a young woman, pale and whose features are blunted by an anæmic dropsy, came to me this morning complaining of her heart beating. According to our forefathers, the heart acting too quickly requires some sedative to slow its pulsation. Such a line of treatment would be a fatal failure. The blood is very scantily furnished with red corpuscles, every organ in the body is supplied with insufficient nutriment; the heart does its duty in pumping the blood to the medulla oblongata, but the blood it pumps is so poor that the centre for the vagus nerve acts but feebly; the heart thus loses the advantage of its controlling action, and, in short, gallops away under the cruel spur of the sympathetic. The right treatment, undoubtedly, is to improve the blood with the perchloride of iron and general tonic treatment. We must learn to regard these alleged over-action, then, with a sceptic's eye, and seek for the real cause of suffering in something beyond.

This cause is invariably present; it is our duty to discover it and our prerogative to remove it. Toothache, then is not an over-acting dental nerve, it is not a spontaneous hyperæsthesia suddenly and facetiously developed; it is the evidence that some definite irritation exists either in the neighborhood or in some remote spot. You will readily understand that for one and the same lesion the degree of pain varies according to the individual sensitiveness of the cortex of the brain or the tone and vigor of the nerve affected. And again, the neuralgia of a big nerve is far more severe than that of a small one. You may remember the dogma of Romberg that pain in a nerve is its prayer for purer blood. But nerves are not so intellectual; they are more like babies, they cry out when they are hurt. Now it requires some pains and patience to find out where they are hurt, but as surely as the cause is sought for with a clear head and an impartial eye, so surely will it be discovered. If we make up our minds to discountenance the strictly symptomatic form of treatment as opposed to the thoughtful and rational, we will make fewer mistakes and better men. It is no easy task to face the thousand and one variations and mimicries the nervous system plays to us, and to be able to read the riddles aright. Still, if we do our clinical work carefully and conscientiously, we will discover the best treatment, though it may be in an empirical way.

The situation of pain you usually meet with is where the sensory filaments of the fifth cranial nerve are distributed. Now, this nerve, as you know, has three branches; that is to say, the ophthalmic, the superior maxillary, and the inferior maxillary.

Ophthalmic neuralgia is far and away the most common and expresses itself most acutely in five foci, that at the supraorbital foramen being the most frequently affected.

But pain occurring in one supraorbital area, at periodic intervals between the attacks, is usually due to malaria, and a pain felt by the supraorbital nerve on the vertex of the head, as if a nail or spike were being driven in, is a peculiarly hysterical symptom. Syphilis, gout, and rheumatism have a great partiality for fibrous structures, and for causing a thickening thereof, Now such a thickening just at the opening of a bony canal, whence a nerve emerges, may press very prejudically upon that nerve, impede its nutrition, and cause severe neuralgia. Imagine such a state of things at the supraorbital foramen.

I mention these incidents and cases that you may be on the alert not to come to a conclusion too rashly, and condemn a tooth to a summary execution without due deliberation. For sometimes your patient may be the very tempter himself to lead you astray from the path I would have you walk in. Take a case in point. A man comes to you complaining of a certain tooth, and details the agonies and sleepless nights it has caused him. You listen attentively, nay, sympathetically. On examining the tooth he indicates, you find it to be perfectly sound. What is your bounden duty? Just examine the teeth in the neighbourhood, and then you may find a tooth or its periosteum gone wrong. Questioning your patient further, you learn that the pain was originally in the diseased tooth, but it went from that to the healthy one. The explanation we need not go far to find The current of irritation travels from the carious tooth along the dental nerve to its ganglionic cell, and this under the painful excitement becomes flushed and hyperæmic. Now this excessive hyperæmia extends and overflows into the adjacent grey cell which happens to belong to the healthy tooth. The result is, that the urgent pain in the carious tooth is relieved, and the healthy one aches because its centre is hyperæmic. Beware, then, of extracting that sound tooth. If, after an operation, you find the tooth in an incurable state, your satisfaction must be complete. If, on the other hand, the tooth is a healthy one, and its extraction unnecessary, what qualms your conscience must suffer. Your success in life depends on your reputation, and your reputation on your professional skill. Convince yourselves first, as far as possible, that a tooth is in an irremediable condition, ere you extract it; and I say this, if the neuralgia be severe, and the tooth appears to be the cause. A very small amount of caries may, in a neurotic patient, give rise to extreme pain, but a soothing dressing and a suitable stopping, accompanied by some quinine or arsenic internally, cures your case. These drugs are tonics to the nerves and to the blood, and they promote the nutrition of the body, hence their marvellous effects in some cases of neuralgia. I hope I am not irrelevant in saying that the Styrians use arsenic to improve their horses' coats. Teeth are epidermal tissues as well as horses' coats.

Phosphorus is essentially a fat forming medicine. Now you will remember that the middle coat of a nerve—the white substance of Schwann—is almost entirely composed of a fatty menstrum. Therefore phosphorus, and among the rest milk, cream, butter and bacon, are of eminent service in the neuralgia of wasting nerves. For an exhausting neuralgia of some weeks' duration, a dose of gr. xx of bromide of potassium with gr. x of chloral every two hours, is very effective. But those sedatives should never be a substitute for the dental surgeon; and, moreover, they ought always to be followed up by some nerve tonic, such as cod liver oil.

Croton chloral has been in use now for more than fifteen years, and there are cases of tic that are best treated by this remedy. It exercises a selective action on the 5th nerve and affords relief without any unpleasant after effects. But in the true epileptiform neuralgia of Trousseau the best treatment undoubtedly is to adminster that "sweet oblivious antidote," chloroform, and then inject morphia hypodermically. This variety of pain is not associated with dental lesions as a rule; therefore it would be an unhappy course to extract teeth for the cure thereof. The treatment of chloroform inhalation, followed by a hypodermic injection of morphia afterwards, is, singularly enough, the orthodox treatment for spasms of internal muscles, and for delirium of some kinds. So that a very pretty algebraical picture is thrust upon our minds, full of interest, truth and suggestiveness. It is this—

Neuralgia : a nerve : : Spasm : a muscle
: : Delirium : the mind

and we can go further and say—

Numbness : a nerve : : Paralysis : a muscle
: : Coma : the mind

In a case of sick headache, technically known as migraine, the storm is sometimes preceded by neuralgia of one auriculo-temporal nerve. If aconite be applied externally over the painful area, and extract of Indian hemp administered internally in 1-gr. doses every 2 or 3 hours, relief will come safely and quickly. But disabuse your minds of the hope of curing a case of migraine by simply extracting a tooth. It is a possible but a very unlikely result. Iron is an exceedingly valuable medicine when the patient's gums are pale, whatever the lesions in the teeth may be. If the neuralgia be due to inflammation, no medicine is better than antimonial wine in xv. m. does every hour.

If there be periostitis, a brisk counter-irritant should be applied to the gum in the neighbourhood. A good liniment for this purpose is made by mixing equal parts of Fleming's tincture of aconite and a strong liniment of iodine (iodine the strength of the Pharmacopœia liniment). In all cases of neuralgia it is your paramount duty to examine the teeth very carefully and then decide on your treatment.

If we could take a leaf out of many past lives it would astonish us to know how many teeth have been extracted that might have been saved if a little more care and attention had been bestowed. For, after all, the practice of your profession is not summed up in the words "Operate as much as you can," but rather in doing your utmost to preserve the teeth of your patients, and save them from as much future discomfort as possible. And the value of a single tooth must not be forgotten. My paper would be sadly incomplete if I did not express my sentiments on the other side of the question I have been discussing from its conservative aspect. I must tell you I have a very high appreciation of your profession, and of the noble position you may reach by patient earnest work. The day will come with its golden opportunity (and may it come often !) when you will strike with your forceps well home round a sinful tooth, wrench it from its socket, and so save your patient from a lifelong misery, from epileptiform seizures, or from a state truly deplorable, yet none the less real— a state sans eyes, sans ears, sans taste, sans everything. Neither the dentist nor the doctor can afford to dispense with each other in this cosmopolitan problem—the treatment of pain. The dentist does his work admirably and precisely, but it requires a prescription from the doctor to restore the nerves to the normal state they were in before they contracted the evil habit of aching. The physician who treats a facial neuralgia without consulting a dental surgeon drags his patient, as a rule, into a slough of despond, and himself into professional disrepute. You have no doubt observed that I have omitted many remedies of undoubted efficacy in the treatment of pain, notably stretching and excision of a nerve, and the application of the electric current. I could not say all I would have wished to say, but if I have warned you against too hurried a diagnosis, if I have encouraged you to forget crooked creeds and worn-out dogmas respecting the treatment of pain; if, in short, I have led you into an atmosphere of more thoughtful and conscientious work, I shall be glad to know your sympathies are mine, and each of us can say with Matthew Arnold, in his "Obermann," that—

> ". . . . rigorous teachers trained my youth,
> And purged its faith and cleansed its fire;
> Showed me the high white star of truth,
> There bade me gaze and there aspire."

—*London Dental Record.*

ARTICLE II.

THE COMBINATION OF METALS FOR FILLING TEETH.

BY DR. C. T. TOCKWELL, SPRINGFIELD, MASS.

[Read before the New York Odontological Society, October 8, 1887.]

For eight or ten years past I have been endeavoring, by experiment and observation, to determine the value, or otherwise, of a combination of metals over a single metal as material for filling teeth. As a result, I have arrived at certain well-defined convictions. But in considering the matter with reference to a response to your invitation to write upon the subject, for this occasion, I am reminded of a prominent author's exclamation when shown that others had long since given voice to substantially his own thoughts with reference to certain matters. It will not say with this author, "Confound those ancients who are always stealing my ideas," but rather that I am happy—on this occasion at least—in the fact that the experience and observation of so many may be cited as agreeing in the opinion that a combination of metals is of much greater value, in many cases, than any one of the various metals used alone.

As far as I am informed, there is a universal agreement, on the part of those who have given the matter any extended experimental attention, in regard to the *saving* qualities of certain combinations of metals. Personally, I do not hesitate to assert that the employment of a combination of metals as a filling-material is eminently successful as a means of prolonging the usefulness of a very large class of teeth. However, much may be claimed in favor of gold, or any other metal, I am fully convinced that every operator is often called upon to deal with cases where a combination of metals is far preferable from the stand-point of *comfort* to be derived and the *durability* of operations.

Tin and gold, for instance, combined in the same cavity, express a preservative power that either, used alone, fails to exhibit.

This is a matter of such universal acknowledgment, and doubtless one so generally acted upon by those present, that I shall not affront your intelligence or courtesy by occupying any time in the attempt to demonstrate the fact. A benefit may, however, be derivable from a comparison of individual methods of practice, and by a study of the relations that exist between the resulting phenomena—when a combination of metals is used—and the cause, or rather the antecedents, of such phenomena.

I will dwell briefly upon these two points:

First, as to the general methods which, in my own practice, have been found to be most satisfactory, together with the resulting phenomena observed.

For some years past, the combinations that I have used consist entirely of amalgam and gold, and "Robinson's fibrous and textile metallic filling" and gold. The latter, for the sake of brevity, I shall hereafter designate by the term "Robinson's foil." When employing the above combinations they are, of course, used in the order named. In the majority of cases I adopt the amalgam and gold combination; but of late, as the result of observation, I am using more extensively the Robinson foil and gold combination. This is so, partly, because of the fact that by this combination operations can be completed at a single sitting; but more especially because of the most excellent results observed.

Robinson's foil is found valuable in starting large crown fillings that are to be finished with gold. But the cases where it serves the best purpose are in starting fillings on the approximal surfaces of teeth, especially of the bicuspids and molars, when not too badly broken down. Enough of it should be used to form, when finished, an external border of this metal at the cervical margins of the cavity, else the good effect will not be so apparent. If, however, the tooth is badly broken down, or it is of a soft, frail texture, my usual method is to start the filling with amalgam, and at a subsequent sitting finish with gold. My general practice is to restore the normal contour of the tooth with amalgam, at the first sitting, and subsequently cut away such portions of the amalgam as may be deemed desirable, replacing the same with gold, so that when finished, especially with the anterior teeth, nothing but gold shall appear to ordinary observation. This is not a difficult task in any save the most extreme cases. Good anchorage may be secured in and around the amalgam, and the gold can be so placed as to conceal from view all traces of the amalgam. A sort of chemical union takes place between the gold and amalgam, so that from a comparatively slight point of anchorage the gold may be built up and carried well over a slightly-rounded edge of amalgam, thus hiding it from view. The amalgam will become dark in shade, and perhaps black, but the gold retains its native appearance.

In almost any case of badly broken-down teeth the original contour of the crown may be easily restored with amalgam, even if the natural crown is almost or quite gone, and when once hardened it can as easily be faced with gold. In the case of incisors and cuspids, and often the bicuspids also, the amalgam should be cut away along the entire anterior surface, in order to avoid discoloration of that portion of the remaining tooth. In rare cases I find it advisable first to fill the anterior surface with gold, and finish by the use of amalgam in that part of the cavity which presents itself on the lingual surface.

By the use of amalgam and gold many cases are successfully treated that otherwise would have to be "crowned;" and I believe that it affords, in effect, a more substantial and permanent crown than would result from any method with which I am acquainted. I have restored several crowns of superior cuspids in this manner which have done excellent service for six or more years, and which seem to-day as promising as when the work was done.

So much as regards methods. I need hardly remind you that I am not advocating this practice without discrimination as regards the class of teeth which come into our hands for treatment. Where the teeth are hard, strong and well-conditioned, gold is good enough and will serve an excellent purpose. But when we have to deal with that large and utterly disheartening class denominated "soft" teeth, manifesting that treacherous, rapid character of disease called "white decay," accompanied by characteristic environments and constitutional tendencies, we stand before a condition of affairs that challenges a broader and wider treatment than lies within the resources of a mere gold hobbyist. The various cements and plastics may be and are used extensively; but the necessity of frequent renewals is discouraging to patient and operator alike. Whereas with the method I have described, among the several and important advantages that I will notice are:

First, the relative permanency of such work. I have never yet had to remove, replace, or patch a single case.

Second, it affords an economy of time, labor, and consequently of expense, to the patient.

Third, and more important, cavities may be filled in this way and no disagreeable and dangerous thermal effects follow, which, if filled with gold or amalgam alone, would cause the patient much discomfort, to say the least. If a combination of metals as a filling-material possessed no other advantage over any one used alone than that of materially lessening the subsequent thermal influences upon the pulp, it would be sufficient to demand our serious consideration. An entire paper might well be written, taking for its subject this point alone. Just here it is where Robinson's foil is found to be of so much value in starting large crown cavities which are to be finished with gold. I believe its use in crown cavities results in other advantages than that of an avoidance of thermal effects, but this is the one most apparent.

Fourth, and by way of hypothesis, I wish to remark that in all my experience with this method—covering some ten years of time and hundreds if not thousands of cases—I have never had a single case where, to my personal knowledge, a pulp has died under one of these combined metal fillings. Furthermore, I am pretty well convinced that if a pulp should die under these circumstances no putrefaction would occur, and consequently no abscess would follow.

Thermal influences will account for the death of thousands of pulps under gold fillings, and this is the beginning of a series of events which result in abscesses. But there are other effects brought about by the combination of metals than that of the avoidance of thermal influences, and which in my judgment are calculated to aid in the preservation of the life of the pulp, or, in case it does become devitalized, to prevent those chemical changes that result in inflammation and abscess, to which allusion will be made as we proceed.

Fifth, I think it may be said that there invariably follows an improvement tn the physical condition of the teeth when either of the combinations I have named is used; such an improvement as would not follow if either of the various metals was used alone. I might cite hundreds of cases in my own practice in support of this position—teeth that were soft, frail, and subject to rapid decay; teeth that had been filled with gold and the whole list of plastic msterials, and still persisted in going to destruction in spite of renewals early and often. Many such cases have come into my hands and are now being "saved" by resorting to the treatment and methods I have described. Cases can be presented where I think it may be safely said that fillings made of a combination of metals have already done good service for more *years* than may be numbered by the *months* of former fillings of gold and the various plastics. These cases of soft, frail teeth, when treated in this way, seem to, and I am convinced do, become stronger and more dense in a comparatively short time.

There is, therefore, more involved in this method of treating a certain class of teeth than the mere *mechanical adaptation* of the materials used and the *mechanical exclusion* of outside deleterious agents, whatever they may be. With all due respect for those who had views to the contrary, I am fully convinced that, as a result of this combination of metals, a therapeutic effect is realized and a physiological stimulus is engendered which will, in a large measure, account for the favorable phenomena observed.

We are brought thus to our second point,—the relation that exists between the resulting phenomena and the antecedents of such phenomena.

On a former occasion, before another society, my views were given at some length relative to this point. Further observation and consideration have failed to change these views to any material extent. I then stated that, in my judgment, the effects above named may all be primarily accounted for upon the theory of *galvanic action* as a basis of causation.

In regard to the question of thermal influences, there is no doubt but that Robinson's foil is a better non-conductor than gold; and this would, in part at least, account for the immediate favorable results. But there can be little doubt that the galvanic action set up by this combination, taken in connection with the fluids of the mouth, lends an impulse toward the removal of those physiological sensations resulting from thermal influences. There can be no doubt at all that the combination of amalgam and gold, when placed in contact with the teeth and fluids of the mouth, will create an electric current. And I am assured by competent authority that, when a tooth is so filled, the current will flow in the following direction, viz., from the amalgam down through the body of the tooth to the pericementum, from it to the saliva, and from it or through it to the gold. Now, if this is true, there follows a very significant fact, and one that should be particularly noted: The cervical border of a cavity so filled is protected by and enveloped in an *electric current*; and this current renders a certain defined territory or space about such margins *thoroughly aseptic*. Micro-organisms cannot live in this current, and such portions of the oral cavity are free from the chemical changes that result from the agency of these organisms. Have we not a very suggestive fact, taken in connection with the prevalent theory relative to the etiology of dental caries? Approximal spaces are the dangerous points. Approximal cavities, filled with gold or other metals used alone, are very liable to prove short-lived, especially if the teeth stand in close apposition. It is to these spaces that we call the attention of our patients, charging them to be especially careful and thorough in cleansing. Why? Is it not that fermentation and consequent chemical action may be avoided? If this be so, you will perceive the significance of an electric current at these points that will effectually prevent fermentation and chemical action. It would thus seem that we have hit upon the relation of these combination fillings to the fact that they require less subsequent patching than our beautiful operations with gold when used alone in such cavities. In other words, one of the generally observed phenomena, in connection with these fillings, is linked to its antecedents. And here, also, in the explanation of or ground for the hypothesis before alluded to, that a dead pulp in a tooth so filled will not undergo that process of chemical change that results in abscess. Abscesses are held to-day to be dependent upon the activities of a certain class of micro-organisms; and this electric current is fatal to these organisms. There is too much *lightning* about the region of the pulp-canals for their safety and comfort.

But in regard to the action of this electric current about the cervical borders of cavities, rendering them less liable to be affected by a renewal of decay, there results, in addition, to the *mere presence* of the current, another antiseptic element, viz., the *product* of this galvanic action. The oxidation of the tin and silver that follows aids in rendering the space about such fillings antiseptic. The influence of this product, also, upon the immediately adjacent dentine is sufficient to render it less liable to be acted upon than is the tissue surrounding a gold filling. The tissues themselves are therefore, to an extent rendered antiseptic.

But beyond these more direct therapeutic effects resulting from galvanic action, there remains another that should not escape attention. I refer to its physiological effect.

That there should be a *stimulating of physiological* function as a result of this galvanic current, seems to be a reasonable hypothesis, and one that is based upon general physical analogy. All the tissues belong to the same body, are under subjection to the same general laws, and will exhibit analogies under similar conditions and circumstances. Electricity, in various forms, is used to-day more extensively than ever before in the treatment of abnormal conditions. It is used to stimulate physiological action. In many cases of tumors, chronic sores, atrophy, etc., it is employed with gratifying success by many of the most prominent specialists. The well-known method of treating bed-sores might be cited. A plate of pure silver, the size of the sore, is put over the affected part; this plate of silver is then connected, by means of a wire, to a piece of zinc which is allowed to rest upon a healthy part of the body. A slight galvanic current is thus established, which proves successful in the removal of these very troublesome sores. It seems reasonable to suppose, at least, that we have here an analogy with the favorable action of the combination of amalgam and gold, or tin and gold, upon diseased dental tissue. With the healing effect, or something analogous to healing in the soft tissues, and restoration of the parts to normal action, goes the restoration of the sensitive organs; and, in consequence of this, the normal feeling or sensation to heat and cold is restored.

Further than this, my observation is a good deal at fault if there is not an improvement in the density and general condition of the teeth very soon after these fillings are introduced; and I cannot regard it as at all improbable that the resultant galvanic action is the immediate antecedent of such improvement, and of an increased resisting power on the part of the tooth, which of itself is a fact of prime importance.

Now, gentlemen, if these things are true, or even approximately true, it is clear that our patients would be greatly benefitted if a much larger use of a combination of metals were to be generally adopted than is the case to-day. The advantages accruing vastly outweigh any minor objections which need to follow. Of course, this kind of work, as is the case with all others, may be slovenly performed, and the teeth can be made to appear unsightly, to say the least. It is not a method that delegates to the past all skill, care, and the exercise of good judgment. When these are exercised, all objections to its use may be reduced to an insignificant degree.—*Dental Cosmos.*

ARTICLE III.

UNHEALTHY BREATH.

BY ALFRED H. TESTER, L. D. S. ENG., D. M. D. HARV.

[Read before the Brighton Dental Society, December 10t , 1887.]

The subject which I have chosen to speak to you about this evening is not, I know, an inviting one. It is shunned by most dental writers, and articles treating of it in our journals are very rare.

The question naturally arises in our minds, What is the reason of this almost total neglect of this very important topic, which, if not absolutely belonging to our specialty, is one so intimately connected with it, that it should interest every member of our profession?

I cannot but think that the neglect is occasioned by want of knowledge of its primary causes, and a lack of general knowledge of the relations of all the organs (the one to the other) that work together for the sustenance and maintenance of the life and health of our bodies.

I am sure the existence of it is pretty patent. Does it not intrude on us everywhere—in the street, railway carriage, as well as our homes? Are we not annoyed at every turn—at the place of amusement, at the church and the lecture? I am sorry to say that we are obliged to turn away in disgust ofttimes when conversing with the intelligent, from the foul odour which comes from their breath. Are we not sorry within ourselves, and is not our pity greater than our disgust for those unfortunately so afflicted?

The love of purity and sweetness is inherent in our natures; a sweet breath, then, becomes a fortune and a blessing. But, as a class, who does it annoy more than the dentist, who, hour after hour and day after day has to earn his living by bending over the "gate-way of life," the breathing-places of human beings, taking into his central vitality the putrid odours which emanate from some of our patients. But, alas! for the weakness of humanity. "They that live in glass houses should never throw stones," and we who criticise are not exempt from the plague, and I am sure we should look to ourselves before we preach to our patients.

Doubtless, the causes of unhealthy breath are numerous. Temporarily, it may be produced by any nauseous or ill-flavored substance, either chewed or used as food, such as garlic, onions, tobacco, &c., or by bad odoured drinks; by simple opposition to the teeth and mouth of remnants of food getting foul; and by diseases of the teeth and gums, which could at all times be averted by regular habits of cleanliness and judicious treatment—for instance, by washing the mouth and brushing the teeth constantly, and especially the last thing at night, and having all cavities filled, unhealthy roots extracted, and diseases of the gums cured.

Other causes are found in those suffering from dyspepsia and constitutional derangements of the system.

There are also a great many persons afflicted with this unhealthy tendency, who have no idea of its cause through any act of their own, and are as innocent of the existing trouble as a newly-born babe.

We find that we must seek for the cause of the odour in emanations of the glands, placed along the mucous tract, from its commencement to its close, and, of course, more particularly those of the mouth, throat and nasal passages.

We may also seek for it in the air from the lungs, as an emanation from the blood itself.

There may be many other causes, but if we understand the philosophy of the cause of disease in these parts, we probably shall be able to understand it in other parts of the system.

On examining the condition of health, we find that the system may, in its relation to food, be divided into three separate functions:—First, the organs of *reception*, viz., the mouth, teeth, and glands, salivary and tonsilary, &c., preparatory to entering the second—the stomach—portion of the alimentary canal with pancreas, liver, and surrounding viscera, which may be termed the organs of *assimilation*; and third, the remainder of the intestinal tract, kidneys, &c., called the organs of *excretion*.

The functions of all these parts are strictly marked, and never, under the conditions of absolute health, does one organ interfere with the other, but in an overworked, or diseased condition of an organ some other one may assist it in its duties, as the skin, which under ordinary conditions secretes a lubricating fluid for the protection of its surface and adjusting the heat of the body, may carry off through its pores the emanations that more properly belong to the kidneys, bladder, or intestines.

The "*interchange of function*," well known to physiologists, assists us to understand our subject, for, as a rule, all the impurities of the system should be removed by the organs of excretion when they are in a state of health.

Let any of these three organs be out of order, as for example, the motions of the rejecting canal be retarded, the accumulated secretion must find some other exit. Therefore, when there is any disagreeable odour present there must be some poisonous matter confined to cause it; matter that should be eliminated, and which is detrimental to health, and therefore the organs containing it are in a state of disease.

Weakness in the organs of assimilation causes an irritating of the surface of the stomach, which brings on an increase of activity of the blood vessels, and ends in the inflammation of the part.

An illustration of this, is the case of an overloaded stomach. Persons who are liable to chronic bad health will have it come on under such a condition; an hour or two after a meal a tainted breath is noticed, it increases rapidly and constantly, until the stomach appears to be entirely empty. In some cases even then it may continue and increase, but if fasting is continued long enough, the unhealthy taste in the mouth and tainted breath are overcome and purity returns.

If the organs below the stomach do their duty, there will be less chance of unhealthy breath, but if not so, foul gases will be evolved by imperfect digestion and the fermentation of more food than the stomach can wrestle with.

The proper balance of diet in its vegetable, animal, and mineral constituents will, as far as diet is concerned, produce health, but it is necessary that all the surplus that is not retainable should be thoroughly eliminated from the system; but to do this the excretory organs must be in active working condition; they should not be coaxed into working order by the aid of aperients.

If these organs are not capable of this duty, and cannot fulfil it completely, some portion of the debris must remain in the system, and as it is a poison, it cannot be stored in any one organ without causing danger of a fatal sickness.

Nature, by the same mode of interchange of function, distributes the foreign matter throughout all organs that possess any excretory powers. She loads the blood with it, she lines the air passages of the lungs with it, and also forces it out of the skin.

Wherever nature can oxidise the substances, it is done; but where it accumulates in large quantities, it attacks the delicate tissue of the lungs by a kind of spontaneous combustion.

I think it will be found that certain habits will bring on and continue unhealthy breath, and one of the most common causes is found in persons suffering with constricted, irregular and costive habits of the bowels, and that for its cure, particular attention to regulating this portion of the system is absolutely necessary.

Overloaded and dyspeptic conditions of the stomach are the next causes of unhealthy breath. Let any one who has a tendency to inflamed condition of the mucous coat of the mouth, throat, and surrounding parts, eat an over-full meal of even the simplest substances, under conditions that do not favour the digestion of it and it will bring on the trouble. A hearty meal just before bedtime will probably produce it during the night; so that on awakening in the morning the mouth will be noticeably foul and dry. So also will the tendency be kept up by too frequent meals.

It would be better that we had an interval of six hours between meals, so that the stomach should have time to rest, and the food time to digest.

Articles of food taking five hours to digest cannot be done in three, and no food should be mixed with partly digested material. This, I am sure, is one of the most fruitful causes of inflamed mucous membrane and unhealthy breath.

Spices and condiments, as a rule, should be avoided with food, as they form compounds with animal and vegetable substances, thereby retarding and preventing decay.

A very good rule is: that all articles of food easily decomposed by warmth and moisture out of the human stomach are easily digested in the stomach, and all articles of food which are slow to decompose under such conditions are slow of digestion, the ratio of digestive process being proportionate to the process of decomposition.

Large quantities of fluids are irritants to some people, by floating food and preventing digestion, and if the simple ones as milk and water are, what can quantities of rum, gin and other spirits cause but an irritation to the mucous membrane, a bad taste in the mouth, and unhealthy breath.

I believe we may get complications from unhealthy breath in the form of phlegm and catarrhal troubles.

Another cause of unhealthy breath is due from want of proper mastication, which is very prevalent in our children, who bolt their food, half chewed. Rule:—If you want your children healthy, teach them to chew their food fine and to eat slowly.

Everything that tends to disturb the digestion, either from internal or external causes, will prevent the cure of this disease. Want of exercise, too much worry and mental strain, and too much sensuality.

To persons who are subject to the direct action of mercury, lead, phosphorus, and some of the dyeing processes, have the mucous membrane and bones of the mouth affected by these metals, and are the subjects of very fœtid odours, and complications of blood poisoning soon follow.

I think that one of the greatest causes of this misfortune which attacks some of the members of our profession, as well as other people, is that brought on by indigestion, caused by imperfect mastication in the hurry of professional life, bringing on an irritative dyspepsia, acidity and flatulence.

To those to whom this disease comes as an infliction, we must tender our regret, but those whose mouths are nasty by their own filth, uncleanliness and dirty habits, we must withhold our symphthy.

We are members of a profession that teaches cleanly habits, and to make our teachings effectual, we must be cleanly ourselves. Preaching is no good without the practice. One cannot conceive how any dentist can approach his patients with a befoulment of onions and tobacco in his mouth; but disagreeable as this is to most patients, it is quite sweet to those whose clothes as well as their mouths are saturated with the stale odours of second-hand cigars and pipes that some of my friends are in the habit of using, being quite innocent of their faults.

As regards the treatment of this subject, any dentist who discovers that he has a tainted breath should always when working over a patient close his mouth tightly and breath through his nose. Have at hand some disinfectant mouth wash, and keep .the mouth frequently rinsed at intervals.

Another palliative is to keep the mouth wet with fresh saliva by chewing some inodorous substance, as a piece of paper or gum elastic. Do not use cachous, as the remedy is often as bad as the disease.

A very good antidote for offensive breath is the concentrated solution of chloride of soda, six to ten drops in a wine glass of water, to be used after the toilet is completed in the morning. In cases where the odour from carious teeth is combined with that from the stomach, a teaspoonful of the solution in a tumbler of water will act as a charm, a drop of wintergreen being added to make it pleasant.

Patients suffering from this unhealthiness should, after having been advised to use local remedies, study the necessity of taking more active exercise, together with abstinence, inhale and exhale the pure air, oxidize the food and blood that will kill the odours.

In concluding my paper, which I fear may have been dull and uninteresting to some, I emphasize my wish that the members of the dental profession should give more attention to this most important subject.—*Dental Record.*

ARTICLE IV.

PYORRHŒA ALVEOLARIS WITH PRACTICAL CASES.

BY J. L. GISH, M. D., D. D. S., JACKSON, MICH.

[Read before the Detroit Dental Society.]

GENTLEMEN :—I ask your indulgence while we consider the very important disease commonly known as Pyorrhœa Alveolaris with a few practical cases.

Definition: Pyorrhœa Alveolaris is purely a descriptive name or term, designating the term of lesion; namely, a flow of pus from the alveolar process and its associated parts.

Causes: Pyorrhœa Alveolaris may be hereditary or acquired. When hereditary, it is due to the want of tone, or power of resistance in those tissues, that later on become the seat of disease; but it is more commonly acquired by some *mechanical, chemical* or *thermal* irritant, thus producing the simple or non-specific form of inflammation. In heredity the form of inflammation is specific. This disease is about equally divided between man and woman and comes to our notice, more generally, about middle life. This disease may be the result of catarrhal troubles of the throat and head.

Pathological Anatomy: The changes that take place in the alveolar process and its surrounding tissues depend entirely upon the kind and intensity of the degree of the inflammation. We will find the tissues in the pathological state, from the simple active and passive congestion with its serous effusions in the tissues to the absolute destruction of all involved structures.

In this disease, as in other manifestations of inflammation, we must note *first,* the changes in the circulation; and *second,* the changes that take place in the adjacent tissues. If we had the tissues involved under the microscope, we would first notice a dilation of the capillary vessels, but it is soon retarded, and the red corpuscles crowd together in masses, forming roleau, while the white corpuscles, known as *leucocytes*, increase in number and move very slowly along the wall of the vessels. At this point we have the first stage of inflammation, namely, congestion.

Presently the circulation through the parts or parts becomes completely closed, and the stagnation is the result: but, while the stream of blood is being slowed in its course, the red corpuscles accumulate in the arteries and the white bodies find their place in the veins, whose anatomical structure; namely, their thin walls, more readily admits of the escape of the leucocytes by their amœboid movements into the surrounding structures. The red corpuscles also escape, but in a very limited number. At the same time of the passing of the leucocytes, there is also the transudation of the *liquor sanguinis*, forming the serous effusion.

The escaped leucocytes not only increase by dividing and multiplying, but they also excite the tissues into which they find their way, into increased cell-proliferation. This in turn causes a greater nutritive activity, with the resultant formation of the cell-growth, which plays such an important part in the pathology of the lesion called inflammation. This new cell-growth is very unstable and it soon passes into retrogression or the breaking down stage, with the production of pus. Pus being formed it dissolves alike both the *hard* alveolar, the dental organs, and soft structures, thus completely destroying the involved tissues, and ending a cycle of changes, only again to be renewed and cause further destruction of the parts by continuity and contiguity.

This disease may extend to one or more teeth, from the adjacent structures, in one or the lower jaw; or in its more aggravated forms it may involve the alveolar arch of both jaws, with the final loss of all teeth implicated. The close anatomical relation of the structures within the tooth substance and those without, will at once suggest the dangers and results liable to the pulp when the outside tissues are diseased.

In a very acute case, the root membrane undergoes a gangrenous metamorphosis with its attending results.

In the more chronic forms, along with the destruction of the alveolus, the cementum and dentine of the tooth structure are changed by the pathological process of *necrosis* and resorption.

Of course, this cycle of changes is increased or retarded by the intensity of the inflammation and the resistive powers of the individual.

Symptoms: The symptoms of this disease are both objective and subjective. In the milder forms or in the earlier stages of this lesion, we notice the red and congested appearance of the gums, the soft boggy look and feeling, with more or less serous effusion. If the congestion be of the passive character, the gums will be more or less purple. During the acute stages, the disease is attended with pain. In the latter or chronic stages, the gums present more of an angry look, a higher degree of redness, with a greater degree of infiltration of the surrounding soft structures, with blood, liquor sanguinis, and pus. The pus is present in such quantities in some cases as to be plainly seen around the necks of the teeth; and, if not in sight, it may be very easily brought to the surface by pressure upon the gums. In the less severe cases, the pus is only seen upon the facial segment of the gum, but it is found upon the lingual when the affection is more advanced.

The pressure of the tongue and its constant sucking action upon the lingual surfaces of the alveolar process, will undoubtedly account for the seemingly absent purulent matter upon the lingual segment in the less severe or aggravated cases.

The breath is tainted with a characteristic odor varying in tensity according to the severity of the case.

The subjective symptoms in the advanced stages of Pyorrhoea Alveolaris are a bad taste in the mouth, especially in the morning, due to the quantity of purulent matter that has been discharged imto the mouth during the night. The tooth or teeth are found to yield under pressure, due to the breaking down of the proper support, and in the advanced stages the disease may be attended with neuralgic pains in the face, head, arms, and chest: and by careful examination some point or points may be found which, upon touching, may bring about the pains in one or more of the above mentioned parts. The acute sense of taste is more or less destroyed.

Course, Duration and Termination: The course of Pyorrhœa Alveolaris is acute, sub-acute, and chronic and the outset is at times obscure. This lesion may be developed and run its course within a few months, or it may take years to bring the disease to its full development. The termination of this trouble is complete destruction of the tissues involved, with the dental organs as well, unless arrested in its course with remediable agents. It is not subject, only in a very slight degree, to remediable agents, in the very last stages of the disease. If we are successful in arresting the disease, we cannot restore the true anatomical relations between the hard and soft structures.

Diagnosis: Pyorrhœa Alveolaris is not confounded with any other lesion of the oral cavity. The trouble is easily recognized, except in its early stages, and when the disease commences in isolated spots on the alveolar arch, then it may be easily over-looked.

Treatment: According to the etiology of this disease, the treatment naturally divides itself into *local* and *constitutional.*

In the specific cases which are of a *strumous diathesis,* such constitutional treatment should be employed as will restore the powers of assimilation and nutrition to the proper functions. In fact, the whole system must be put into its best condition. And this is met or aided by strictly observing personal hygiene, careful diet, regular habits, and the giving internally of the elixer of calisaya, iron, and strychnine, or citrate of iron, or bark, iron, and hypo-phosphites of lime, or some one or more combined of the many forms of bark, iron, and lime. Of course, in the specific cases, we must also use *local treatment.*

In the non-specific or acquired cases, the cause being mechanical, chemical, or thermal, we must first remove the cause and then apply such antiphlogistics as shall arrest the disease, and overcome the existing stages of inflammation; and this may be accomplished in some such manner as follows: If the exciting cause be of a mechanical irritation, such as the deposits of calcarious matter upon and around the necks and roots of the teeth, it must be very gently removed with Scalers, three-edged chisels, and other necessary instruments at our disposal; and in performing the surgical operation, care must be taken lest we defeat our object in a great measure by excessive mutilation of the adjacent soft structures. We must ever remember the surgical law, that all wounds do not terminate alike in all persons. The restoration of the parts depending at times upon the peculiarities and constitution of the patient. A second point to be observed in removing the mechanical irritation is *not to be in a hurry.* Do not try to remove too much at one sitting. The quantity that can be removed without injury will depend upon the quantity of deposit, the degree of inflammation, and the condition of the patient. No absolute rule can be given for the above, but we must be governed by general principles.

If chemical irritants, as mercury and fumes of phosphorus are the primary causes, we must first remove the patient from the source of contamination and then free the system of the irritants by the proper systemic treatment. We may correct the mercury by internal administration of chlorate of potassium, and the phosphorus by the aid, internally, of turpentine, iodide of potassium, and bichloride of mercury.

Should thermal changes be the cause, we have simply to bring about their cessation.

When catarrhal troubles are the cause, we must meet them with the proper agents, and the secondary consequence will cease.

Having eliminated the primary causes, we have now to overcome the existing inflammation, which, if found in the acute (and by the way we rarely get the patient when in this stage), should be treated by mild non-irritant remedies, as glycerine, aconite, and belladonna, remembering not use astringents in any form in the acute stage. In the sub-acute we may use mild astringents as glycerine 1 drachm; tannin 5 grains; or a solution of hydrastine and water, equal parts; or nitrate of silver, 2 grains to water 1 ounce.

When the chronic form is reached we have only to increase the power or strength of our anti-phlogistic remedies according to the intensity or chronicity of the disease. When the disease is attended with suppuration, then we must employ astringents, antiseptics. and disinfectants. Remove the broken down structures and provide as free drainage as possible.

In the last stage of the disease there are two drugs, iodide of zinc and peroxide of hydrogen, that fulfill the requirements for the astringent and disinfectant properties exceedingly well.

The antiseptic qualities are met by a mouth wash as follows: listerine, 2 ounces; oil of eucalyptus, 10 drops, and water 8 ounces; and a mouth or tooth powders as follows: prepared chalk 6 drachms, bicarbonate of soda 10 grains, prepared oris root 2 drachms, and oil of wintergreen 5 drops. The mouth wash is directed to be used one-half to one teaspoonful into a quarter of a glass of tepid water, after each meal and at bed time. The wash must be held into the mouth from one to two minutes, and thoroughly forced in and around the teeth in order to get the desired results. The powder is used every, or every other, or every third night at bedtime, just before using the mouthwash as the case requires.

Mode of Administration of Peroxide of Hydrogen and Iodide of Zinc and their Chemical relations: A hypodermic syringe with a blunt needle is the instrument used in injecting the agents in solution, into the diseased pockets. This solution coming in contact with the purulent matter, at once consumes the carbonaceous matter and produces, as by-products, water, nitrous acid, and carbonic acid gas. The chemical changes in the carbonaceous matter prove to be the required disinfectant, while the nitrous acid thus formed gives us a tonic or stimulating astringent.

With the pockets yet filled with the solution of peroxide of hydrogen and its formed by-products, we again, having washed out the syringe, re-fill it with a solution of iodide of zinc, two to five grains to the drachm of distilled water and again we pass the needle around and into all diseased pockets in the same manner as we did the peroxide of hydrogen. No sooner do the two solutions come in contact, than a third medicinal property is formed by the liberating of the *iodine* from the zinc, and the forming of an aqueous solution of iodine, which is a non irritant, and has the therapeutical properties of causing inflammatory products to be absorbed.

The applications are made every day, morning and evening, for one or two weeks, and as the disease disappear we lessen our number of treatments.

When we desire to remove, by slough, any part of the diseased structures and bring about a speedy resolution, it may be effectually accomplished by an application of Robinson's remedy, or equal parts of iodine crystals and creosote.

Objection: There is one objection to the above treatment and that is its administration is a trifle inelegant; but at the suggestion of my friend, Dr. W. C. Ames, of Chicago, we are now able to produce free iodine at just the point where we desire it by the electrolysis of iodide of potassium. With the foregoing treatment, with more or less modifications, we can cure the disease known as Pyorrhœa Alveolaris, but we cannot restore the lost parts.

Owing to the length of this paper I will cite just two typical cases taken from my record of cases on Pyorrhœa Alveolaris and treated in accordance with the above remarks.

Case No. 1. Mrs. M. aet. 45; both dental arches complete, not much deposit upon the teeth, bad taste in mouth; breath very offensive; all teeth in mouth loose and sore; gums highly congested and swollen, and so thoroughly infiltrated with pus as to well up around the cervical border of each tooth. The probe could be passed along the side of the roots of several teeth to nearly their apex. She had noticed some trouble with her gums for seven years past. For the last two years she had been troubled with severe neuralgic pains in the head, breast, shoulder and down the arm to the elbow. I could bring on the pain to the right elbow at once by touching the buccal side of the anterior root of the right lower, first molar. She had sought for relief for the past three or four years, but was told that the extracting of her teeth was the only remedy. She did not want to lose her teeth, hence she endured the pain.

Her directions with regard to personal care were about the same as pointed out above. Her teeth were cleansed and the mechanical irritations of deposits removed, which was the only assignable cause that I could give; although her health at that time was not just as good as it might have been. General systemic tonics were ordered to be taken after each meal, and we made applications of peroxide of hydrogen and iodide of zinc, night and morning for two weeks with marked improvement; no pain, no pus, and little motion of the teeth. At this point she was called away, and I provided her with a solution of iodide of zinc, four grains to the drachm, and directed her to apply it to the gums once a day with a small camel's hair brush, which she did for one year, at the end of which time I saw her again and found the disease somewhat improved, besides arresting its onward march. I again advised continuance of the same treatment.

Case No. 2. Mr. H. aet. 25; both dental arches complete; no deposit upon the teeth; severe burning pains at necks of six, lower, anterior teeth; gums red but not swollen; by pressure upon gums a light saneous fluid would appear at the necks. Trouble had existed for four weeks. General health excellent. At that time no cause could be assigned. He was given the above described mouth wash and tooth powder, and we applied the peroxide of hydrogen and iodide of zinc treatment once a day for five days with complete success.

Two weeks elapsed and he again presented himself with the same symptoms, only in a different place· namely, the left lower *bicuspids* and *first molar.* A few treatments and the trouble was at an end. Something like another week of time went by and he again came to see me; this time complaining of the upper central incisors and upper left bicuspids. We easily corrected the trouble, but the difficulty was to find out the cause, which, at last, by a happy hit, proved to be the smoking of cigarettes. This thermal change being removed the cure was complete.—*Dental Register.*

ARTICLE V.

ODONTOLOGICAL SOCIETY.

The ordinary monthly meeting of the above Society was held on the 6th ult. at 40, Leicester Square, Mr. S. J. Hutchinson, (Vice-President) in the chair.

Mr. Hutchinson read a letter from the President, Mr. Daniel Corbett, regretting that ill health and bad weather prevented his attendance, and hoping that he would be able to be present to read his Inaugural Address at the March meeting.

The Librarian reported several presentations to the library, including Mr. Christopher Heath's Lectures on "Certain Diseases of the Jaws;" "Note Book for Dental Students," by Mr. James Rymer; "The Proceedings of the Royal Institution;" "Footprints of the Profession," being an Address to the Maine Dental Society; and two pamphlets by Dr. Magitot.

The Curator said that they had added a very fine specimen of a Tetradont to their collection. Mr. Howard Mummery presented the skull of a rabbit showing injury to the pulps of incisor teeth some long time previous to death. There was also a case of dilaceration of the incisor teeth of a porcupine, which was similar to the rabbit just mentioned.

Dr. W. St. George Elliott made a "casual communication" on "A System of Crowns." Previously he had had something to say on the advisability of crowning teeth. Many, doubtless, had looked into the subject, and those who had done so would certainly have recognised that it was advisable. He was of opinion that of all operations there was none which gave so much satisfaction both to patient and operator, a statement which could hardly be made of bridge-work and some other methods. It would be remembered that Dr. Knapp wrote an article for the *Dental Cosmos*, in which he described an elaborate system for making crowns. When Dr. Knapp was in London he gave a demonstration, at Dr. Elliott's invitation, and it was considered very successful. But while the exceedingly artistic character of the work was admitted, the length of time required (five hours) made it a somewhat impracticable operation, the crown being entirely of gold. Dr. Elliott had adopted a method which was a great saving of time, and he claimed for it equal advantages in point of efficiency with Dr. Knapp's system. It was somewhat allied to the principle of the Richmond crown, the cardinal feature of which was the fixing a gold cap or lid upon the stump of the tooth, the stump having been cut away nearly to the alveolar margin of the gum. But there was the objection to this plan that the gold was frequently visible. Dr. Elliott recommended his own process as exceedingly simple. In the first place it was not necessary, as by the Richmond method, to cut away the whole of the remaining portion of the stump. He always allowed every portion of the tooth remaining to assist in holding the crown, providing it was not in the way. An impression of the stump and the bite was taken, then a process similar but not exactly the same as suaging was followed; which gave a cap the exact copy of nature.

Mr. Redman (of Brighton) could fully endorse, from his own practical experience, all that Dr. Elliott had said, but found the best plan for getting a proper occlusion plate was by Dr. Knapp's process.

Dr. G. Cunningham (Cambridge) said, with regard to the system of capping the crown, he confessed that while æsthetically the system recommended by Dr. Elliott looked better, for getting thorough occlusion nothing could excel, in his opinion, the use of the gold ferrule without the cap, and with or without How's screws in the root canals, and filling up the cavity with amalgam, With reference to taking a model of the root, he had lately adopted a modification of the Herbst method for using the matrix, and thought it better than the wire method.

In connection with the system of using ferrules in crowning teeth, there was one point in its favour—viz., that the ferrule made the operation of crowning possible in many cases which had passed beyond the stage where the pivot method was applicable.

Dr. Mitchell regarded anything in the way of models as a waste of time, and described his own method of striking up tops, by which he was able to reduce the time taken to produce a gold crown from five to one or two hours. He thought that two hours was long enough for any operation in gold crowning.

Mr. J. Smith-Turner was very much struck with some of the views expressed on the subject. It seemed to him that the operation of cutting away part of the tooth, putting a ferrule round the root and pushing it well down to the gum, instituted that very condition of things which they were told to avoid when plugging a tooth.

Dr. Field: Perhaps Mr. Smith-Turner forgot that in filling or plugging a tooth they were in most cases dealing with teeth not very far advanced in decay, whereas in crowning the tooth they were dealing with the merest shell.

Dr. Mitchell remarked that in the case of the stopping or filling they had more or less rough material upon the gum; in the other they had a highly polished bank.

Dr. Cunningham said that, like Mr. Smith-Turner, he had been brought up in the orthodox school, but having seen very successful results from Dr. Elliott's method, and practically experienced the advantage of it, his first prejudices had been overcome. He thought the answer to Mr. Smith-Turner was that the periosteum did not descend down to the neck of the tooth for some considerable way.

Mr. Smith-Turner was still of opinion that his position had not been assailed.

Dr. Elliott said that, in the first place, his was not a new-fangled notion. He had seen crowned teeth fifteen years ago. He had never met with failure of a crown nor any dental irritation.

With regard to the nitrous oxide blow-pipe, Dr. Rollo Knapp claimed to be the inventor, and he patented the invention both in America and in England. Whether his conduct had been in accordance with their notions of propriety, he (Dr. Elliott) would not say. But this he would say, that one of the members of the Odontological Society, Mr. Hunt, of Yeovil, used and described the use of the nitrous oxide blow-pipe nineteen years ago for melting gold. He would add, however, that the whole thing was very simple, a bottle of nitrous oxide and an ordinary blow-pipe being all that was required.

Mr. Bland Sutton read a short paper in connection with his previous paper on "The Classification of Odontomes." Two days after reading that paper a "thar," or Himalayan goat, died in the Zoological Gardens with a large suppurating mass involving each upper jaw. Beneath the right orbit existed a sinus discharging pus. The upper molar teeth were defective, and in the middle of each alveolar border there was a large recess leading into the antrum. These recesses contained a considerable quantity of fine chaff and hay. A longitudinal bisection showed that each antrum contained a cyst with dense thick walls, the outer shell being of bone, lined with thick fibrous tissue, and the interior being filled with denticles, fragments of cementum, and bone of varying sizes amounting to nearly 300.

A careful study of the specimen had convinced him that all those remarkable cases included in his list as "anomalous" odontomes had their origin in aberrant follicles of that nature. He therefore proposed to include "anomalous odontomes" under the term "Compound Follicular Odontomes" in section B of his previous paper. The case further justified him in including dentigerous cysts among odontomes. Having described the characteristics of Follicular Cysts, Fibrous Odontomes, and Cementomas, he concluded by saying that the specimen which formed the subject of the paper was further interesting as confirming his opinion that the hard tumours seen in museum, only represented half the case. Every odontome had a periodontomal capsule on which it depended for nutrition. When the cysts suppurated the capsule became destroyed, the hard part necrosed, and in ordinary cases sloughed out. Odontomes were practically teeth, and like teeth, underwent eruption. The suppuration usually attendant upon this was frequently the first indication of trouble.

Mr. S. J. Hutchinson asked if many of the denticles contained true cementum, and if any contained dentine.

Mr. Bland Sutton replied that some contained cementum, not many, and it was uncertain whether any contained dentine.

Mr. C. S. Tomes said he would like to ask Mr. Bland Sutton a question with regard to this most remarkable and completely described odontome. Mr. Sutton said that in it there appeared a mass which resembled alveolus. Did not this put it in the classification of ovarian tumours, where there would be a large amount of bone formation?

Mr. Bland Sutton replying, said that in all those cases in which dentigerous ovarian cysts containing teeth had been described, skin containing hairs, muscle, &c., might be associated with them, but in the present case none of the characteristics of ovarian tumours presented themselves.

Mr. Storer Bennett begged leave to point out that there was rather a closer connection between ovarian tumours and odontomes than was supposed. Mr. Sutton had said that ovarian tumours had hair in connection with them. It so happened that he (Mr. Storer Bennett) had met with an odontome taken from a pig in which a number of bristles were distinctly visible.

Mr. Bland Sutton thought that Mr. Storer Bennett had probably mistaken whisps of chaff, grass, or hay for hairs.

Dr. A. W. Harlan, of Chicago, then read a paper on

THE TREATMENT OF PULPLESS TEETH FROM THE POINT OF VIEW OF EVERYDAY PRACTICE.

Dental surgeons were everywhere devoting much of their thought, ingenuity and energy in the direction of maintaining within the mouth many pulpless teeth that in former times were needlessly extracted.

Out of this growing conservative tendency had grown various procedures; some designated by their authors "mechanical methods," and others "the immediate dressing and filling method," and still others as "the time dressing, or therapeutic expectant, method." This variety of treatment would be a danger to the student and inexperienced surgeon unless directed by a strong hand.

Pulpless teeth were found in all the "seven ages of man;" even the teeth of the first dentition did not escape the ravages of caries, nor was slow death of the pulp, or its destitution by other means, unfrequent.

Pulpless deciduous teeth and roots might properly be retained for mastication up to or about the time of the expected eruption of their successors.

For the convenience of handling the subject, he would divide it under the following headings:—1, teeth deprived of their pulp by means of corrosive medicaments, or immediate operative procedure, cautery, broaches, wooden points, anæsthesia, or accident; 2, death of the pulp as a result of capping from rapid thermal changes; 3, death from partial laceration, as from a blow or fall, or from torsion in correcting irregularities, or from imperfect or partial extractions and replacement of teeth; 4, death from gradual exposure by caries or some form of abrasion or erosion; 5, death from exposure through salivary deposits, exposing the apices of roots by displacement of tissues, or from the development of pockets resulting from the so-called "Riggs' disease" and their extension to or around the apices of roots; or death by irritation due to pulp nodules, or strangulation, and from unknown causes.

The classification, imperfect as it was, would suggest that no single method would suffice to meet all the various pathological conditions.

From a somewhat extended experience, covering a period of nearly twenty years, he had a record, not of hundreds, but of thousands of teeth treated and their roots filled with few recurrences of fistulæ or abscesses.

His method of procedure was, for Class 1, three things to be insisted upon. (*a*) Complete disinfection, nothing being allowed to enter the pulp chamber that was not placed there by his own hands, by means of clean and sterilized instruments. Water and saliva to be rigidly excluded. (*b*) No powerful coagulators of albumen to be introduced into the pulp chamber prior to removal of the pulp. (*c*) Any incorporation of antiseptics or disinfectants with the filling to be avoided. Having destroyed the pulp by any of the methods referred to, extirpation followed; in the case of fractured teeth cessation of hemorrhage should be waited for. Then the pulp chamber should be syringed with equal parts of peroxide of hydrogen and a 1-1000 solution of bichloride of mercury until the canals were free from blood and serum. The root should then be dessicated with absolute alcohol and heated air, and filled at once. If the pulp had been destroyed by arsenic or similar agent, a dressing of tannin and glycerine should be applied to the devitalized pulp, first puncturing it to allow any congested blood to escape. The dressing should be covered with gutta-percha, perforated in two or three places, to allow of the escape of confined air. After eight days the dressing should be removed, the rubber-dam placed over ths tooth, and the pulp extirpated with suitable sterilized broaches. The pulp chamber should then be thoroughly washed with the solution mentioned, and the root filled at once. The roots should not be drilled, but access obtained by freely opening the pulp chamber.

Class 2. There was little difficulty in diagnosing this class, one of three conditions always being present, viz., encystment of the apex, a dormant or cold abscess, or a fistulous tract leading from the end of the root externally.

Treatment.—For encystment, disinfecting dressing and immediate root filling. For dormant abscess, the rubber-dam being adjusted, the tooth and drill should be bathed in terebene, the pulp chamber entered, and the contents at once bathed with a penetrating disinfectant, which should be allowed to remain for a few minutes. Roots should not be drilled unless they were carious. Cotton wool saturated with some essential oil should be packed lightly in the root and the pulp chamber filled with dry cotton, over which should be packed some soft gutta-percha perforated for the escape of gases. After ten days the dressing should be removed. Absence of gas or moisture would show whether the abscess had disappeared. Either being present, the treatment should be repeated. The value of an essential oil dressing was that the reproduction of tissue was stimulated.

The introduction of a powerful coagulator of albumen would be most disastrous without providing for drainage. It would be far better to cut through the gums and alveolar process and provide an outlet at once. Time would always be a factor in the destruction of microbes, and the disinfection of infected dentine was a matter of no small importance. The practice of leaving antiseptics and disinfectants within the root canal or pulp chamber as a safeguard against future trouble was delusive. In cases of fistulæ, disinfection and immediate filling was generally possible.

Class 3. Treatment same as Class 2.

Class 4. In death of the pulp from abrasion or erosion, in nearly every instance the roots would be found to be encysted; in such cases immediate filling might be proceeded with after thorough disinfection.

Class 5. In this class immediate filling was not desirable when the teeth were to be retained. Dr. Harlan advised cleansing the canals as in Canal 1, then packing the roots with threads of cotton wool saturated with a mixture of olei cinnamoni 20 minims, olei gaultherii, terebin. *aa* 30 minims, and seal the crown cavity with hard gutta-percha. The dressing should be allowed to remain from one to six months, and the root then filled permanently.

Class 6. Circumstances generally pointed to the necessity of temporary root dressings to prevent pain and swelling.

Dr. Harlan, in conclusion, said he was not unmindful that certain complications might and did arise. Certain relief was always afforded by drilling directly into the pulp chamber, a course to be preferred to drilling through the alveolar process.

After entering the pulp chamber and gently removing the pulp under antiseptic conditions, great comfort would be given to the patient by painting the dried gum with equal parts of chloroform, tincture of aconite and tincture of iodine; and the immediate administration of 1-10th gr. pills of calcium sulphide every fifteen minutes, until four or six had been taken. Occasionally pulpless teeth were elongated, and closing of the jaws gave pain. This might be obviated by grinding the occluding serfaces. Much of the success in the management of pulpless teeth Dr. Harlan attributed to the thorough removal of all pulp tissue and other foreign matters, and the fidelity of filling the roots with a substance neither porous nor corruptible by the fluids of the mouth.

The Chairman said Dr. Harlan had brought forward the subject in such a masterly manner that he felt sure many of the members would be desirous to speak upon it, and he trusted that as there was not much time at their disposal for discussion, they would not allow the momento to slip by unutilised.

Dr. Mitchell strongly supported the part of the paper which laid special stress upon the importance of cleanliness and regarded it as one of the important factors towards success. With reference to the common practice of filling teeth with antiseptic dressings, he had known cases where it had been necessary to refill such teeth, and the offensive odour omitted from the removed dressing was a sufficient condemnation of the practice There was nothing like doing a thing thoroughly that was worth doing at all.

Dr. St. George Elliott showed and described a combined syringe and washing apparatus for treating and washing dead teeth. It was made with a spring, had an ordinary nossle for ordinary use, and also two platina nossles. By means of this syringe it was possible to pass water backwards and forwards in the nerve canal until it was thoroughly cleansed. There was a still finer nossle which Dr. Elliott claimed could be passed two-thirds of the way up the canal and remove the greater part of the *debris*. He did not see why it should not be possible to pass gutta-percha up the canal and allow it to do its own filling.

Mr. C. S. Tomes thought that in their daily practice in dealing with a septic condition of the teeth they ran some danger of losing sight of what they had to do with. He was by no means sure that Dr. Harlan, in his free use of antiseptics, had not once or twice done so. In the first place, during operations in the mouth, an aseptic condition was almost impossible. He wished particularly to call attention to the point that they were told to sterilize their instruments, but if anyone hoped to puncture with an antiseptic, let him try how far an ordinary instrument would pierce into the dentine, and they would find it would make very little headway indeed. Dr. Harlan mentioned the necessity of observing a series of precaution in cleaning out the tooth; then he put the stopping in and covered it with gutta-percha, in which he bored holes. He (Mr. Tomes) thought that in treating such a tooth they would do well to dismiss from their minds the possibility of attaining perfect aseptic conditions. He wished merely to sound a note of warning, not to talk about something impossible of attaining, and forget more practical considerations, which would lead to more practical success.

Dr. Field had had some good rrsults in his own practice by the adoption of the method set forth by Dr. Harlan, but with occasional failures for which he could not account, which would discover themselves sometimes after three months, sometimes after three years. He was of opinion that success depended on delicacy of manipulation, not permitting the fine-pointed instruments to puncture beyond the apex of the root. He wished to say a word in support of the old method. He had seen the roots of teeth filled with nothing but cotton wool and creosote that had stood for years, so that in point of fact, although complete, antiseptic conditions were not obtainable. The closure of the foramen had been obtained, which led him to the conclusion with which he started—viz., that whether they filled with one material or another, the main point seemed to be delicacy of manipulation. If this were secured, he believed they might use half-a-dozen different filling materials and obtain satisfactory results.

Dr. Walker said perhaps it would afford the Society some little pleasure to be reminded that the subject dealt with by the paper was no new thing; that so far back as 1865 their then President, their present Treasurer, Mr. Thos. Arnold Rogers, who was with them that evening, and would no doubt have spoken but that he was very unwell, read a paper on that very subject, and any member who felt interested in the subject, by turning to the volume of the "Transactions" for 1865, could read for himself. Mr. Rogers there gave a long account of how he filled and treated roots; he showed his instruments to the Society and gave them records of his own treatment. He (Dr. Walker) had the pleasure of co-operating with him at that time, and it was only a few weeks ago that the speaker saw a canine he had plugged in 1871 by the method advocated in 1865 which was then in good condition. He had followed out the plan of not filling with cotton but with metal to the apex of the root, and he fully bore out Dr. Harlan's view that if sound roots were filled with metal good results would be obtained. He had seen Dr. Harlan's work in Chicago, and he was struck with the very great care he exercised, especially in preventing moisture returning to the roots after treatment.

The discussion was continued by Messrs. T. A. Rogers, Hern, Walter Harrison, Lloyd Williams and R. H. Woodhouse.

Dr. Harlan, in replying, said with reference to the remarks of Mr. Tomes, he felt sure that they would agree with him that in order to protect gelatine or any other substance from microbes and their spawn, the cotton wool was the very best substance to stop the tubes with, and it would not matter if the cotton wool should not be dry. It was not expected that the wool would remain dry for more than a moment, with the perforation in the gutta-percha cap; but it would intercept and prevent any bacterium flowing into the pulp-chamber. Mr. Hern appeared not to have followed the portion of the paper which dealt with cleansing and disinfecting. He objected to his (Dr. Harlan) using essential oils, saying the oils were incompatible with water. If Mr. Hern had followed the paper carefully, he would have seen that the parts were cleansed with peroxide of hydrogen or corrosive sublimate solution and thoroughly dried. Then again, when a strand of cotton wool was interposed, saturated with some essential oil below body heat, he would agree with him that that became at once a non-irritating and permanent disinfectant, as distinct from an antiseptic as a disinfectant could be. He was afraid he was unable to agree with Mr. Hern in reference to disinfecting by mere drilling. He would reply to Dr. Walker, that the practice of drilling or reaming roots would never become universal. With reference to wooden points, he would remind Dr. Cunningham that he (Dr. Harlan) had published eight cases, and he was bound to say that six out of the eight patients had threatened to leave him never to return.

After the usual vote of thanks, the Society adjourned. —*London Dental Record.*

Monthly Summary.

FORMER ILLIBERALITY IN THE PROFESSION.—Dr. Dwinelle, of New York, one of the oldest practitioners of the profession, says: When I first essayed to enter the profession I was snubbed at every point. I could not get information from any one unless I paid a price altogether beyond my means. I stopped at a city in the northern part of this State, not a thousand miles from Albany, and went in search of information. I had a limited amount of means in my pocket, and was willing to expend it for that purpose, though I ought not to have been willing to expend a cent. I was kept in the reception room, and when I made a suggestion that I would like to go into the operating room or laboratory and see what was going on there I was met with the statement that it would require from five hundred to a thousand dollars to gain the desired admittance. I was treated in the most illiberal manner, and, poor as I was, I left the house with a degree of righteous indignation that I think was worthy of a saint; and when I got outside I looked up, and though I did not pronounce a curse on that house, I did promise myself that I would see the day when those two dentists would sit at my feet and learn wisdom. Years afterward, when I had attained some reputation and was located in this city, I was gratified to receive a letter from these gentlemen soliciting the privilege of coming to my office and seeing my method of operating with crystal gold and cohesive foil, which was new to them. I immediately responded, cordially inviting them to come. They did so, and I entertained them for the most of two days, to their great satisfaction, and when they were leaving they proposed to pay me for my time and instruction. I repelled this proposition almost with indignation, as being contrary to the true spirit of professional courtesy, and reminded them that it would be both illiberal and degrading to make a traffic of what should be free to us all. They departed, seemingly under a deep sense of obligation to me, and I could not resist the conviction that they were impressed with the difference in the treatment they had received and that which they had extended to me years before.—*Cosmos.*

WASTE.—The complete erasure of the word "waste" from the dictionaries, at all events in so far as it has any relation to industrial products, if not quite an accomplished fact, is undoubtedly becoming more and more imminent; and we may thank the chemists of this generation for teaching us how to recover and utilize innumerable substances which, our grandfathers in their ignorance, threw away Thirty years ago the manufacturers of iron, gas, and chemicals everywhere neglected all but the prime objects of their industries, whereas to-day, on the system of taking care of the pennies and allowing the pounds to take care of themselves, competition has induced us to regard our many by-products as so many integral parts or branches of each enterprise. If the intelligent men who have "gone before," and who were looked on by their contemporaries as wise in the generation, could by any chance reappear among us, we might conduct them to our gas works, and with a certain pride explain the origin of our sulphate of ammonia, our aniline dyes, and our hundred other extracts from coal tar. From the contemplation of gas we would turn with them to some of our smelters and furnaces, and point to the mineral wood, the cement, the glassware, the pottery, the fire bricks, and the fertilizer, all derived from our furnace slag, and finally, entering a great chemical works, we would show them how the once devastating gases, so fatal to life and vegetation, are no longer sent free into the air, but are condensed and transformed into staple articles of trade, and how by an ingenious and, to them, undreamed of process; we extract the precious metals from our exhausted sulphur ores. To their wondering question, "How can these things be?" we might reply that all these marvels result from a modern and enlightened policy, which, in many countries, has fostered every species of research in every branch of science, encouraged great minds to ponder over and gradually unravel the mysteries of nature and stimulated a general thirsting for that knowledge which, properly applied, must ever ameliorate our condition in this "vale of tears."—*The Age of Steel.*

MAKE YOUR WORK A PLEASURE.—We feel as awkward in speaking on this subject as when lecturing on intemperance; we have never experienced the misery of intemperance and therefore can only speak as an observer. So we have no experience in having an unpleasant vocation, and therefore can speak only as an observer. We have been so fortunate as always to have had work that pleased us.

But we believe, if we were ever so unfortunate as to have a work that was irksome, we would forthwith look for something pleasurable in it to relieve its irksomeness. And they say "what we look for we usually find." It is something like the weather. There are persons who are never satisfied with it. If a day does chance to suit them, it is looked on as "a weather breeder"—a sure precurser of a storm. We said to a friend the other day who was complaining of the rain, that we had not seen a day of bad weather for twenty-five years. "O, well, said he, "I suppose it is wrong to be always fretting about the weather, we have got to take it as it comes." But even this is not the spirit in which we should view either our work or the weather. We should not only be willing to tolerate it, but to meet it with cheerfulness, and to enjoy it. The weather is just right. It must be, for it represents God's wisdom and goodness; and the better we live in harmony with His laws, the clearer we shall see its adaptation to the world's best good. Besides, if we do not like the weather of one section, He has given us the means of locomotion to take us to another section, and surely we ought to be pleased somewhere. So with our work; it is given to us for our greatest good, and we have our choice of such a great variety, it is a pity if one of its many phases cannot suit us; generally, if it does not, the fault is within ourselves.—*Items of Interest.*

CLEANING THE TEETH.—Dentists are daily committing the error of not instructing their patients in regard to the proper methods of cleansing their mouths—brushing, picking, rinsing with warm water after meals and at night before going to bed. Our observations must show that people who do those things faithfully, have little or no dentistry to do. It is astonishing what ignorance exists among people of all classes and conditions, as to what cleanliness of the mouth means. They will tell you frankly that they do not brush their mouths as well as they ought to, for they did not know they were going to be examined and when you looked, *you really thought so*, and the second thought was *probably not for a month.* Cleanly habits are part of an individual's education and can be formed only in childhood. Too much care cannot be bestowed on the subject for the little ones. Each individual must see it thoroughly done—have it done for him and experience having it well rubbed in with a brush. Not much dentifrice of any kind is needed—small quill tooth picks are best, narrow strips of rubber dam for spaces the quill will not clean. Water used frequently for rinsing, with a motion of the tongue on all the surfaces of the teeth and gums, lingual, palatal, labial and buccal. So much for preventive dentistry which should be our highest aim.— *W. N. Morrison.*

SWEETS constitute an important part of our diet. Children are bribed to do plain duties, by promises of more sweetmeats. Drinks which would have been sickeningly sweet to a palate of years ago, are daily demanded by children of our day. Syrups to excess are used daily in all families. Milk and eggs are ruined in their healthful simplicity by the addition of sugar and lemons; and other mixtures are made that deprive the teeth of use in mastication and furnish the secretions of an abnormal quality favoring destruction by decay.

I have watched with much interest and sadness the teeth of children in families where much sugar was used, and invariably their teeth were bad. One family, relatives of mine, used four barrels of sugar a year. When adult life was reached, there was not one mouth with the full quota of teeth—all had extensive fillings made, and two of the young ladies have their mouths full of crockery substitutes. Employees of long service in confectionery shops and candy factories are also affected in the same manner. It is the excessive use of these articles, simple in themselves, which is doing the irreparable hereditary damage.— ***W. N. Morrison.***

THE PHILOSOPHY OF A COLD.—Dr. Frank Woodbury, a good authority on colds, Professor of Materia Medica at the Medico-Chirurgical College, of Philadelphia, recently lectured at the social meeting of the Alumni Association of the Philadelphia College of Pharmacy. His subject was "The Philosophy of a Common Cold," and the practical result of his remarks may be summed up thus: The way to cure a cold is to cure the patient, and the time to cure the patient is before he gets the cold. In other words, the proper way is to abolish the "catarrhal state;" and the catarrhal state of the system is that in which it is favorable for the catching of a cold. There is a susceptibility by some to take cold, while there is resistance by others. Of a large audience leaving a heated hall and entering cold air outside, some take cold while others do not. The reason why all do not take cold is because they are not susceptible. Susceptibility to cold, he said, is probably due to impairment of nutrition. Physicians find that after a period of exhaustive work they are liable to an attack of cold; but if they be in good health they pass through the same conditions with impunity. A celebrated physician, he said, attributed this catarrhal state to indolence and luxury. "In the sweat of thy face shalt thou eat bread." There is no royal road, said the lecturer, to the plow-boy's appetite, and to have the plow-boy's appetite you must do the plow-boy's work.

The state of the skin is an important part of the catarrhal state. Some people sleep in the same underclothing that they have worn during working hours. The tendency of this is to convert the skin into something like a mucous membrane; it ceases to be a protective covering. With such people the clothes are a part of the body. Benjamin Franklin advocated the air bath. The speaker said that when people came to him suffering with a cold in the upper air passages and bronchial tubes his care is to harden the skin, and for this purpose he recommends the use of the flesh brush, exposure to the air, the cold douche, frequent change of underclothing and physical exercise.

IN FAVOR OF A VEGETABLE DIET.—All the heavy work of the world is not done by men who eat meat. The Roman soldiers, who built such wonderful roads, and carried a weight of armor and luggage that would crush the average farm hand, lived on coarse brown bread and sour wine. They were temperate in diet and regular in exercise. The Spanish peasant works every day and dances half the night, yet eats only his black bread, onion rnd watermelon· The Smyrna porter eats only a little fruit and some olives, yet he walks off with his load of a hundred pounds. The coolie, fed on rice, is more active, and can endure more than the negro fed on fat meat.

MERCURY is one of the best elements in which to plunge the points of dental instruments to harden them. They should, of course, be first brought to a cherry-red.

UNIVERSITY OF MARYLAND.

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PRESTON A. RAMBO, D. D. S.	HARRY H. PHILLIPS, D. D. S.

Assistant Demonstrators of Operative and Mechanical Dentistry.

JAMES M. CRAIGHILL, M. D.	HIRAM WOODS, JR., M. D.

Assistant Demonstrators of Anatomy.

Continuous Gum Work will be Demonstrated by DR. J. W. MOFFITT.

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" A. J. Volck	Md	" W. W. Allport	Ills
" Samuel J. Cockerille	D. C	" J. B. Patrick	S. C
" E. S. Chisolm	Ala	" W. W. Evans	D. C
" George H. Winkler	Ga	" L. G. Noel	Tenn
" B. M. Wilkerson	Md	" V. E. Turner	N. C
" T. T. Moore	S. C	" George W. Field	Eng
" John Murray	Penna	" W. C. Wardlaw	Ga
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" William Farmer	Va	" George B. Steel	Va
" Judson B. Wood	Va	" Henry C. Jones	Va
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" Ellis B. Bliss	D. C	" B. H. Teague	S. C
" Arthur M. Rice	Conn	" Wm. B. Wise	Va
" L. D. Carpenter	Ga	" S. Dwight Hodge	Vt
" L. M. Cowardin	Va	" C. P. Baird	Tenn

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

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Dean of the Dental Department of the University of Maryland.

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Baltimore College of Dental Surgery.

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E. Parmly Brown, d. d. s.	N. Y.	John Allen, d. d	N.
A. L. Northrop, d. d. s.	N. Y.	R. B. Donaldson, d. d. s.	D.
Chas. R. Butler, d. d. s.	Ohio	John Meyer, d. d. s.	N.
E. L. Hunter, d. d. s.	N. C.	H. A. Parr, d. d. s.	N.
W. W. Walker, d. d. s.	N. Y.	J. Emory Scott, d. d. s.	
T. S. Waters, d. d. s.	Md.	E. R. Rust, d. d. s.	D.
David Genese, d. d. s.	Md.	C. L. Alexander, d. d. s.	N.

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W. G. Foster, d. d. s., Demonstrator of Mechanical Dentistry.

Assistant Demonstrators.

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W. W. Dumbracco, d. d. s. G. Marshall Smith, d.d.s. C. S. Seibold, d.
J. W. Chambers, m. d., Demonstrator of Anatomy.
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The greatest proof ever extended for Superiority to any man ufacturer of ***PORCELAIN TEETH,*** *for their Strength, Adaptati and Natural Life-like Appearance, was received by me throug Report of the Judges; Centennial International Exhibition 187*

EXTRACT

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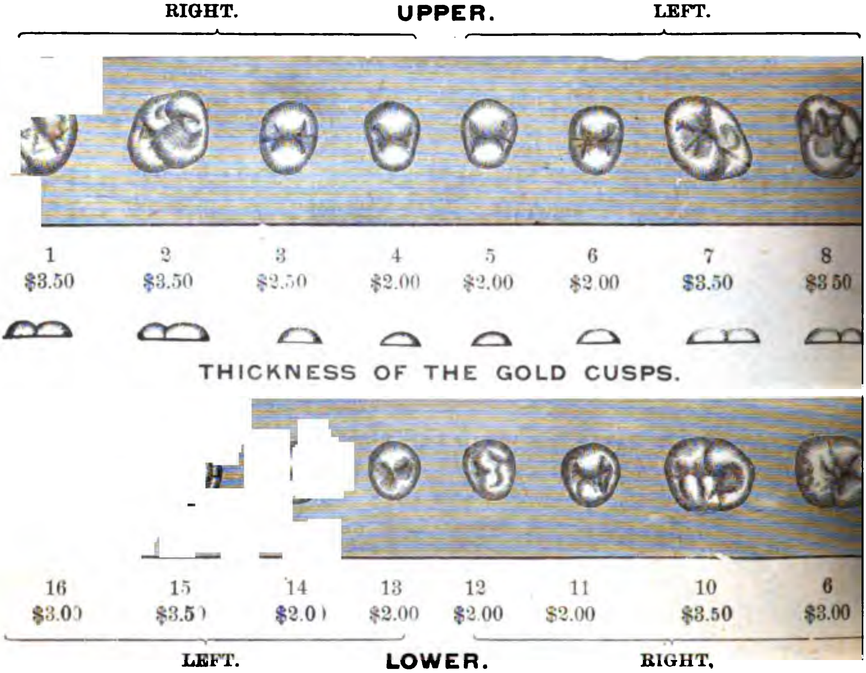

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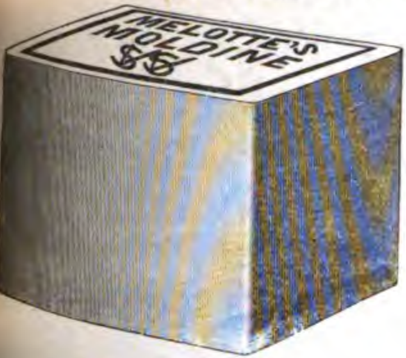
For Crown Dies and Counter-Dies.



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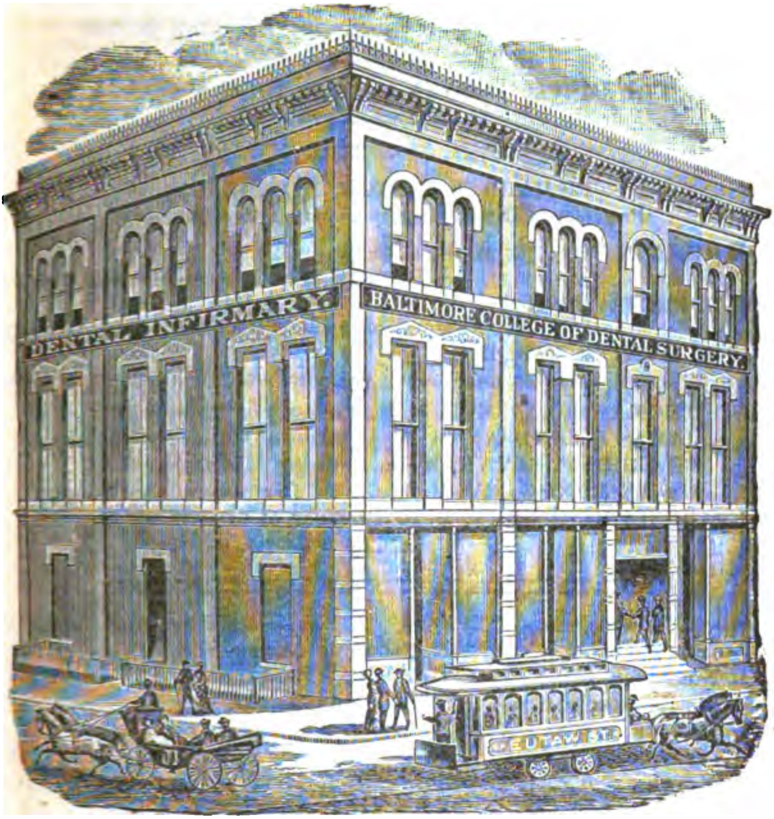
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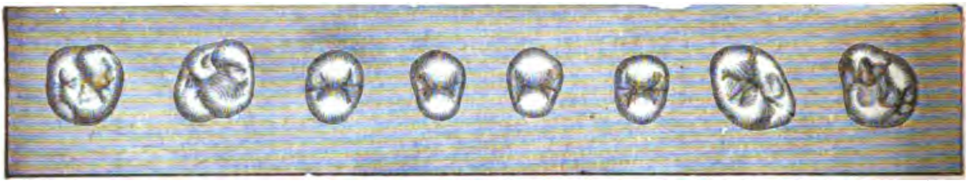
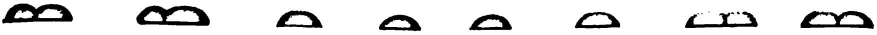


1	2	3	4	5	6	7	8
$3.50	$3.50	$2.50	$2.00	$2.00	$2.00	$3.50	$3.50



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16	15	14	13	12	11	10	6
$3.00	$3.50	$2.00	$2.00	$2.00	$2.00	$3.50	$3.00

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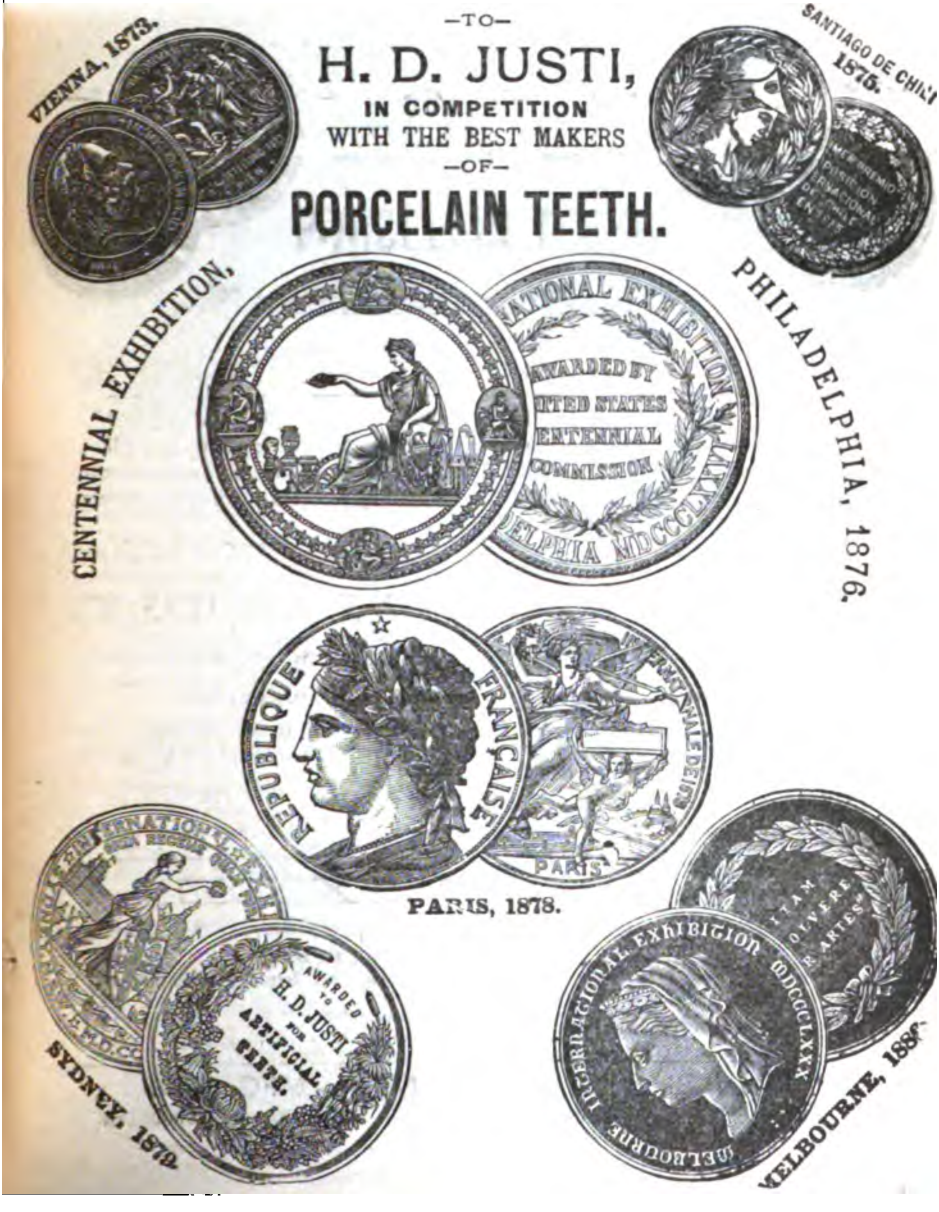
WITH THE BEST MAKERS
—OF—
PORCELAIN TEETH.



VIENNA, 1873.
SANTIAGO DE CHILI 1875.
CENTENNIAL EXHIBITION,
PHILADELPHIA, 1876.
AWARDED BY UNITED STATES CENTENNIAL COMMISSION
REPUBLIQUE FRANÇAISE
PARIS
PARIS, 1878.
AWARDED TO H. D. JUSTI FOR ARTIFICIAL TEETH.
SYDNEY, 1879.
INTERNATIONAL EXHIBITION MDCCCLXXX MELBOURNE
MELBOURNE, 1880.

WILLIAM VALLEAU, JR.

MANUFACTURER OF

SOFT AND COHESIVE

GOLD FOIL,

EUREKA GOLD FILLING,

Extra Dry (Gold & Platina) Alloy, Improved Amalgam, &c.

506 BROOME STREET, - - - N. Y. CITY.

We beg leave to call the attention of the Dental profession to the fact that our business was established in 1849, and has been strictly confined to purifying and hammering metals. With this experience we feel justified in asserting that any article we put upon the market should certainly have the merit which we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made *cheap*.

Our Extra Dry Alloy and Improved Amalgam are composed of entirely pure metals, fused and mixed with the greatest care consistent with a view to produce the general effect to be desired in all Amalgams. They contain no *Cadmium* or *Zinc*.

We will cheerfully extend every facility to anyone desiring to test them to their fullest capacity, and most respectfully invite a trial.

These fillings can be obtained at any first-class Dental depot, or directly rom our house at the following rates:

Soft and Cohesive Foil	$30 00	per oz.
“ “ “ “	15 00	“ ½ “
“ “ “ “	7 50	“ ¼ “
“ “ “ “	4 00	“ ⅛ “

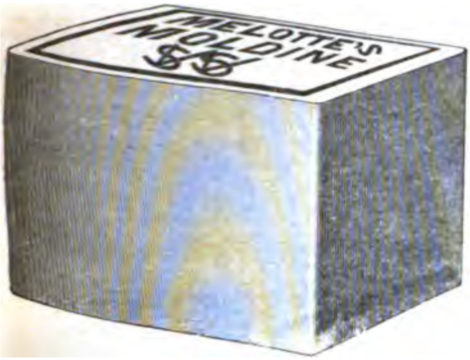
Eureka Gold Filling at same rates

Extra Dry Alloy	$4 00	per oz.
“ “ “	2 00	“ ½ “
Improved Amalgam	2 50	per oz.

All goods can be returned if not as represented.

For Sale By - SNOWDEN & COWMAN

DR. MELOTTE'S
Moldine, Impression Cup, Ring, & Fusible Metal,
For Crown Dies and Counter-Dies.



By means of Moldine and its adjuncts an impression of one or two teeth or roots may be taken and a die and counter-die made in less than five minutes. Gold caps or regulating fixtures may be accurately fitted by means of the dies thus quickly formed. Dr. Melotte and other dentists have found these devices to simplify and expedite crown and bridge-work. Moldine is also an immediate investient for work to be soldered; solder will not flow over the inside of a collar filled with Moldine, or over the inside of its cap. Metal work may be thus made or repaired without waiting a momemt for the Moldine investient to dry or set. If Moldine stiffens by use, knead in a little glycerine.

Printed instructions accompany each package.

In ordering Moldine to be sent by mail please add the postage (20 cents for the complete apparatus; 10 cents for the material alone) to the remittance.

PRICES.

Complete Outfit, inclosed in a tin box containing one half pound Moldine, one Cup, one Ring, and two ingots of Fusible Metal,	$1.50
Melotte's Moldine. ....per half pound	.50
Impression Cup (S. S. W. No. 20)..........................each	.30
Rubber Ring.. "	.05
Fusible Metal, per ingot (about 2½ ounces)................ "	.38

BRITANNIA IMPRESSION TRAYS.
ADVANCE IN PRICES.

Owing to the advance in the price of tin we are compelled to make the following changes in prices of Impression Trays:

Uppers, No. 1 to 8 and 10 to 16.....................each	$0.30
" " 9.. "	.25
" " 17 and 18................................ "	.40
Lowers, " 1 to 16.................................. "	.30
" " 17 and 18................................ "	.40
Crown Work Tray No. 20............................ "	.30

The Wardle and Franklin Trays will not be raised unless a further advance should be made in tin.

THE S. S. WHITE DENTAL MFG. CO.,
Philadelphia, New York. Boston, [illegible] Brooklyn

CHARLES ABBEY & SONS,

MANUFACTURERS OF

DENTISTS' FINE GOLD AND TIN FOIL.

The attention of Dentists is invited to our FINE GOLD FOIL, which is prepared under our constant personal supervision. Our Nos. are 4, 5, 6, and 8.

We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5, and 6.

ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, prepared expressly for the purpose, with great care, by ourselves.

ADDRESS— CHARLES ABBEY & SONS, Philadelphia

LUKENS & WHITTINGTON,

ESTABLISHED 1866.

MANUFACTURERS OF

DENTAL INSTRUMENTS

And Dealers in Dental Supplies,

WHOLESALE & RETAIL,

626 RACE STREET,
PHILADELPHIA, PA.

WE desire to mail a copy of our new circular and prospectus to every reader of the AMERICAN JOURNAL OF DENTAL SCIENCE. If you have not already received a copy, send us your name and address plainly written on a postal card. Address

BEECHER & CO.,

42 THIRD AVENUE. NEW YORK.

DR. GENESE'S

Separating Steam Cured Rubber Strips,

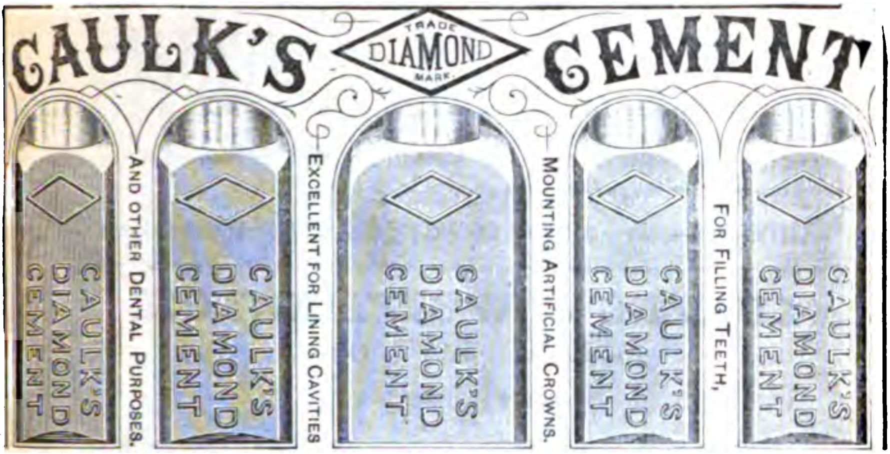
—FREE FROM ODOR,—

Made from Pure Para Rubber,

FOR SALE AT ALL DENTAL DEPOTS.

CAULK'S FILLING MATERIALS.

ESTABLISHED 1877.



CAULK'S
TRADE
DIAMOND
MARK
CEMENT
AND OTHER DENTAL PURPOSES.
EXCELLENT FOR LINING CAVITIES
MOUNTING ARTIFICIAL CROWNS.
FOR FILLING TEETH,
CAULK'S DIAMOND CEMENT

GRAY. YELLOW. LIQUID. MEDIUM. LIGHT

FOUR COLORS and LIQUID.—Gray, Yellow, Medium and Light, - $2.00 per Package.
TWO " " " —Gray and Yellow, - - - - - - - 1.50 " "
ONE " " " —Gray, Yellow, Medium, Light or Gum, - 1.00 " "

This Compound Stands Without a Rival.

USED FOR TEN YEARS BY LEADING DENTISTS THROUGHOUT THE WORLD.

DIAMOND CEMENT Should not be classed with the so-called oxy-phosphates, as is often the case—the materials of which it is composed and its process of manufacture being entirely different—hence its Superiority.

IT HARDENS IN WATER OR SALIVA. Two or more colors blended together (in mixing) will produce any shade desired.

CAULK'S PAR-EXCELLENCE ALLOY.

This Gold and Platina Alloy is manufactured on a new principle. Saves teeth where others fail. It is the result of a long series of experiments, and has been in constant use for TEN years. By our NEW METHOD of manufacture there is no GUESS WORK. The molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

Price, in ¼, ½ and 1 ounce packages, per ounce, $3 00; two ounces, $5.00.

CAULK'S WHITE ALLOY

has been greatly improved. There is nothing equal or superior to it. Is of a peculiar grayish-white color. When properly manipulated with our Purified Mercury it will retain its color under all circumstances.

Price, in ¼, ½ and 1 ounce packages, per ounce, $4.00; two ounces, $7.00.

Caulk'S Diamond Point Stopping and Gutta-Percha Points for Filling Roots.

This form of Gutta-Percha having been in the market for several years, has stood the greatest test of all—that of time. The Stopping is put up in sealed envelopes, and the Pellets, Cylinders and Points in sealed boxes, bearing a ac-smile of our signature.

Price, in ⅛, ¼, ½ and 1 ounce packages, per ounce (reduced to) $2.00.

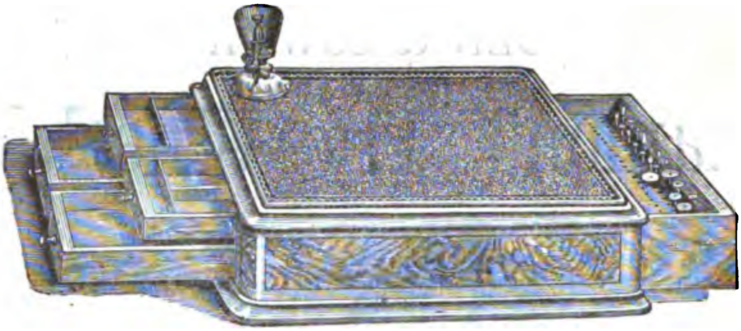
All of Caulk's Filling Materials are sold by Troy Weight and sent by mail.

Over 15,000 Dentists are using these Materials throughout the World. What bettdr evidence do you wish of their Superiority and Excellence?

Orders for Dental Supplies will receive prompt attention.

L. D. CAULK, Manufacturer, - - - CAMDEN, DELAWARE.

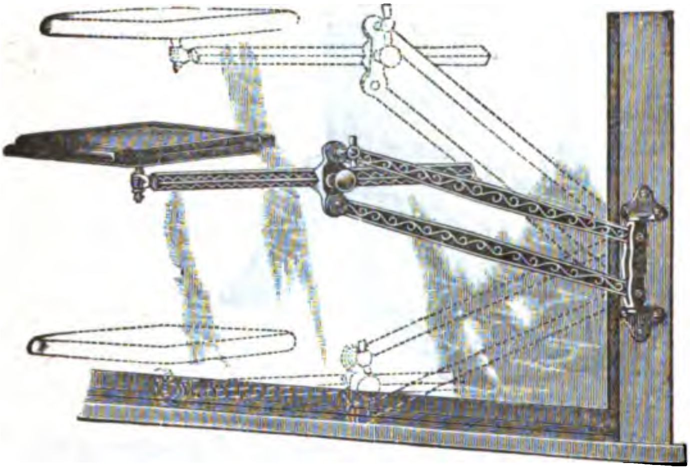
ALLAN TABLE.



VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

STUDENT BRACKET.

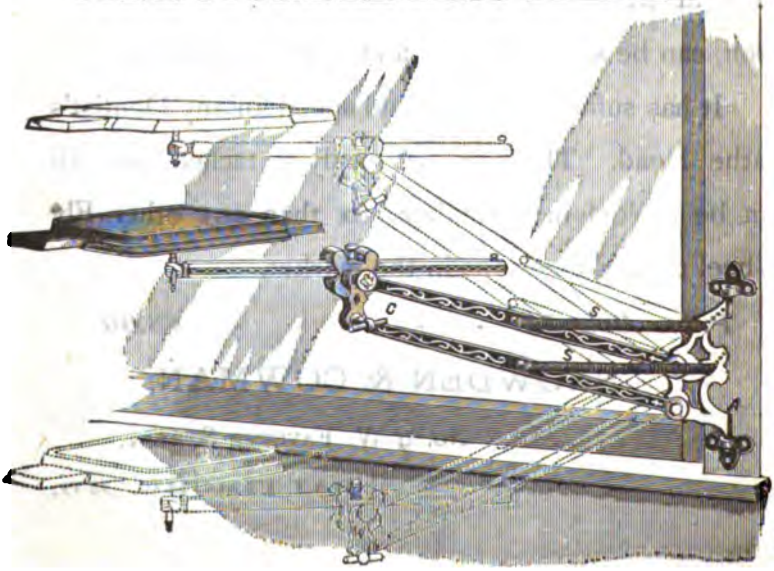


This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel lated. Bar Slides between four rollers. C, the Clamp, can be reg- lated for any load. The Allan Table works fine on this Bracket.

PRICE WITH SMALL TABLE, - - - - - $22.50.

Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

Western and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

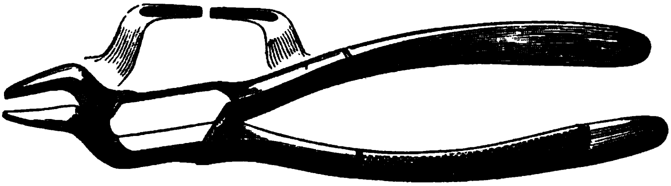
Careful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.
Subscription Fifty Cents.

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen,	$2.00

ARTICULATORS

From	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials,	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound,	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound,	1.25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	$4.00
Caulk's Diamond Pellets, per ounce, Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	$4.00

FOWLER'S TEMPORARY STOPPING.

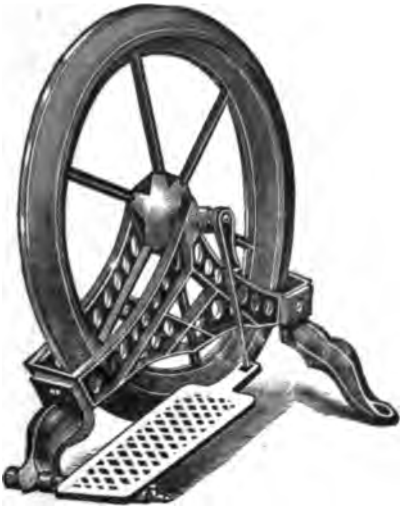
Price per ounce,	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, P[illegible] 1, ½, 1-4, 1-10, 1-20 ounce packages.	$4.00

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

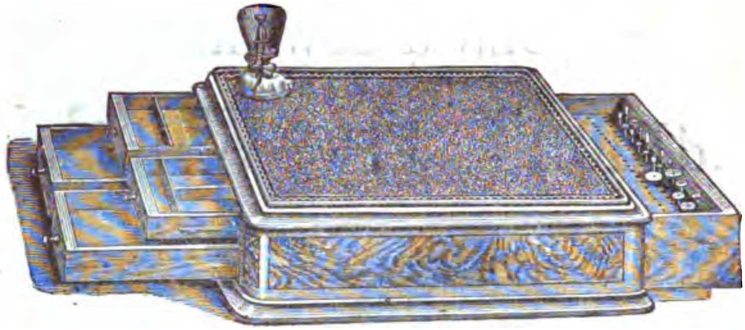
Price Boxed, - - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

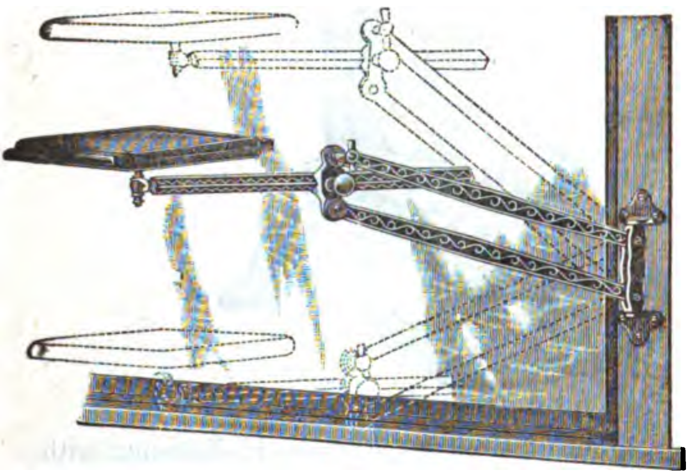
ALLAN TABLE.



VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

STUDENT BRACKET.

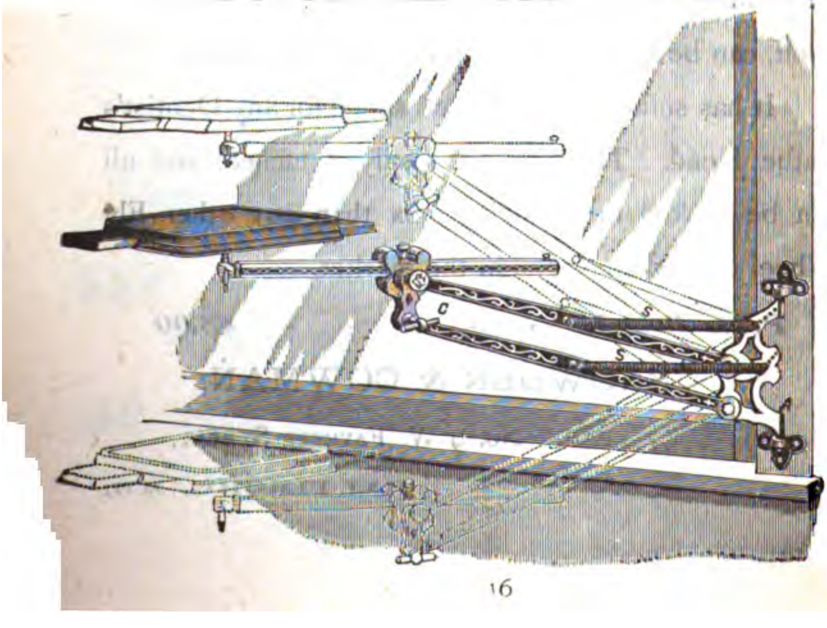


This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

CONE JOURNAL BOSS BRACKET.



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PRICE WITH SMALL TABLE, - - - - $22.50.
" Veneered Allan Table, - - - 29.00.

Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

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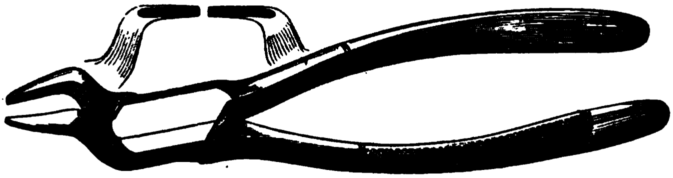

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Can supply any make or number from any catalogue at manufacturers' prices.

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Octagon, Steel Handles, best quality, per dozen, - $2.00

ARTICULATORS

From - - - - - - - $1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - - - $1.25

Hood & Reynold's 0, 1, 2, 3, per pound, - - 1.25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - - $4.00

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce, - - - - $4.00

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - .50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - - - - - $4.00

P[illegible] 1, ½, 1-4, 1-10, 1-20 ounce packages.

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD
RESULTS USE THE
BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling
to Gold.

Put up in ¼, ½ and
1 oz. p'k'gs. Each
package warranted
as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED

—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN

9 W. FAYETTE STREET, Baltimore, Md.

FOUNDED 1869.

GIDEON SIBLEY,

TRADE MARK.

Manufacturer of — Manufacturer and Dealer in

Artificial Teeth and Dentists' Materials.

THIRTEENTH AND FILBERT STS.
PHILADELPHIA, PA.

DENTISTS!

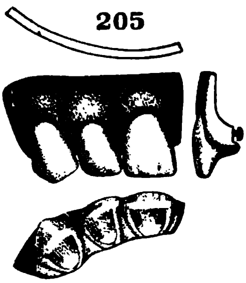
DON'T READ THIS!

unless you want to economize in time, and consequently save money. To accomplish this result you must have the best Teeth in the market, and they are

Gideon Sibley's Improved Artificial Teeth.

From this claim we except no make of Teeth, foreign or domestic, and it is daily substantiated by the unsolicited testimonials of thousands of Dentists, many of whom use these Celebrated Teeth exclusively. Sample sets, $1.00. For sale by all dealers. Sample cards and abridged price list free by mail. All orders for Teeth and Dental Supplies will receive prompt and careful attention.

205



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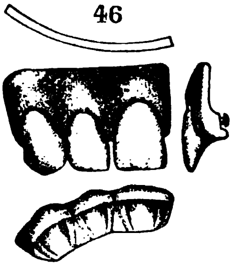

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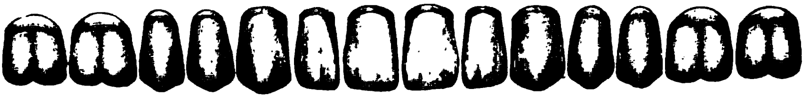
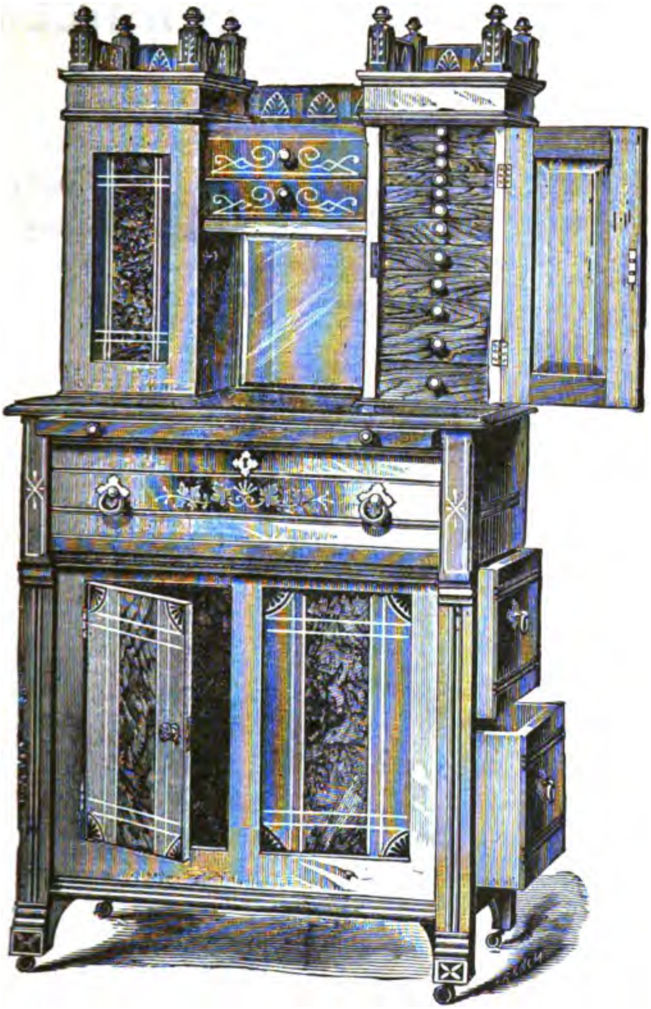


Improved Cabinet Case No. 10.



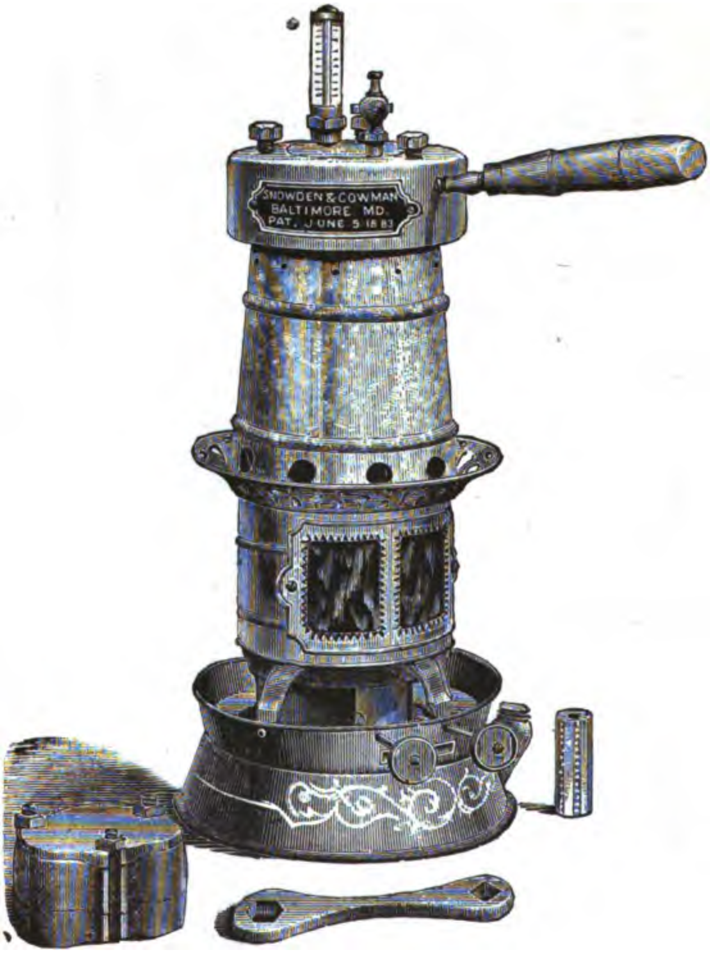
This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅛ by ½ inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

PRICE, with Wood Top (Boxing Free)	- -	**$45.00.**
" With Italian Marble Slab, (white)	-	**50.00.**
" " Knoxville Marble, (pink)	-	**50.00.**

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

BRANCH: 29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
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Gives the Best Satisfaction.

TO INSURE GOOD
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FOR SALE
AT ALL DEPOTS.

MANUFACTURED
—BY—

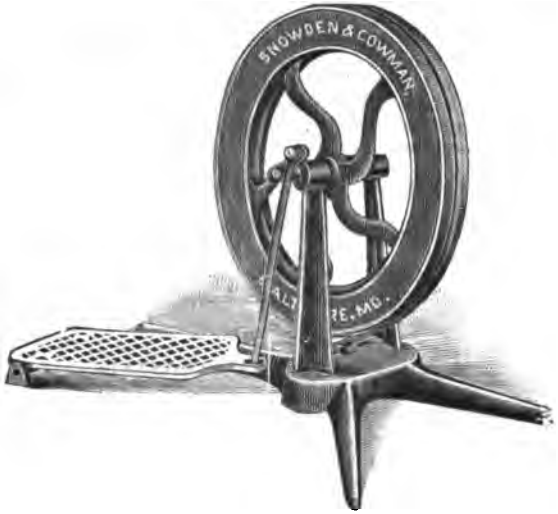
Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.
BALTIMORE, MD.

This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

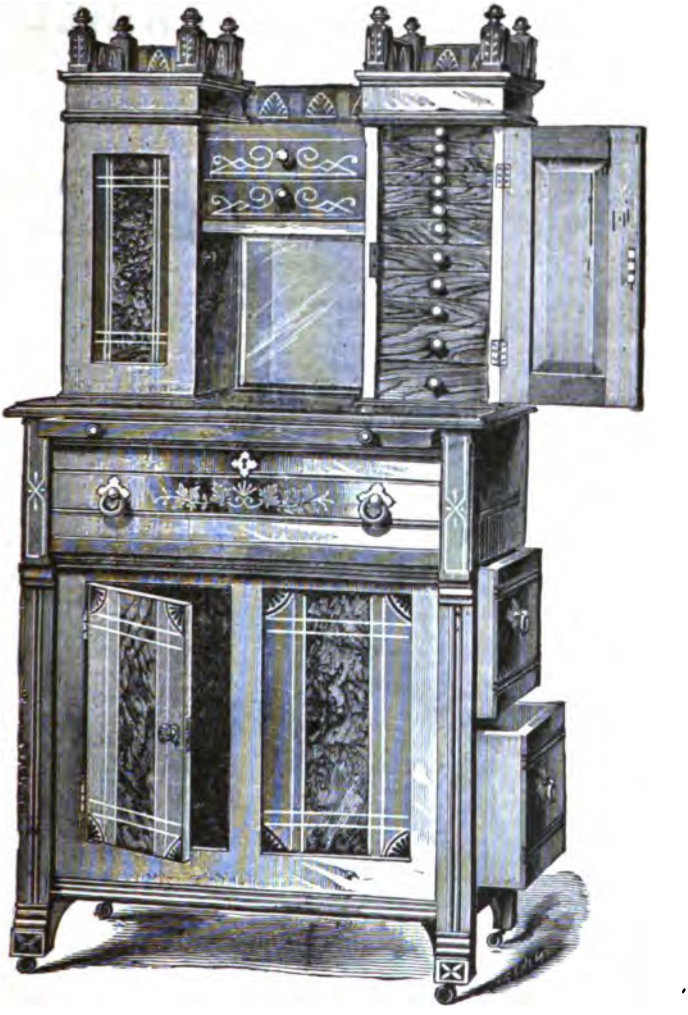
Price Boxed, - - - - - - **$8.00**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

Improved Cabinet Case No. 10.



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Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

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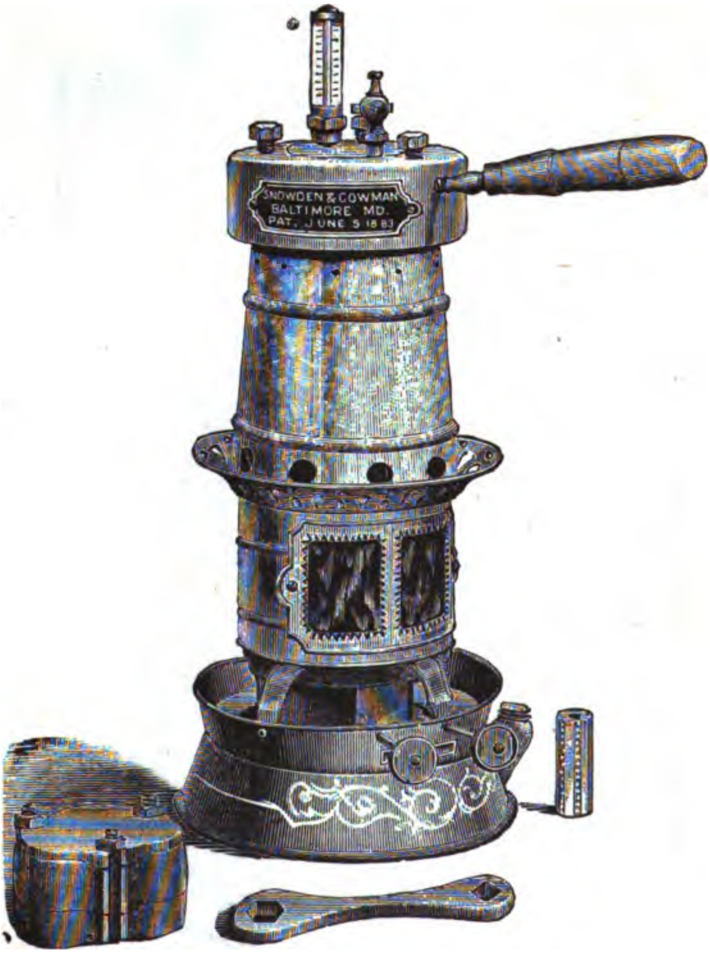
SNOWDEN & COWMAN'S

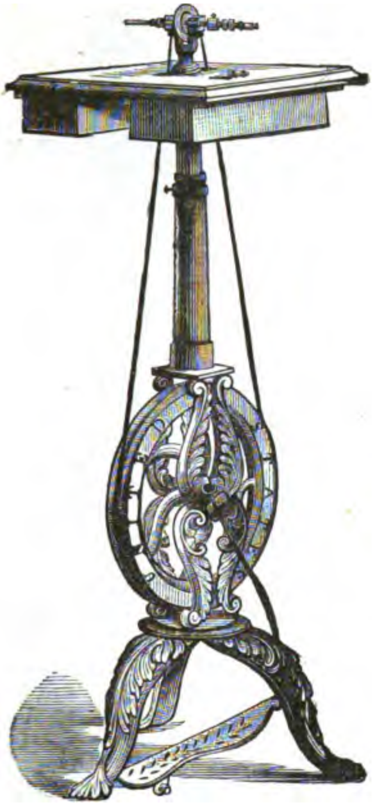
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding teeth and polishing plates.

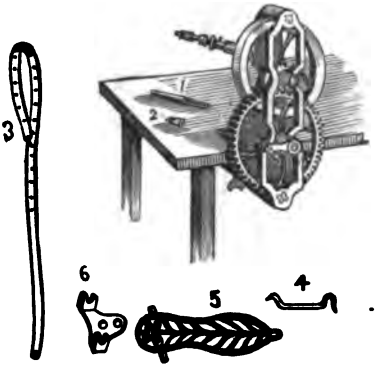
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut, - -	$16 00
" " " " Long " - - -	16 00
" Stand only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

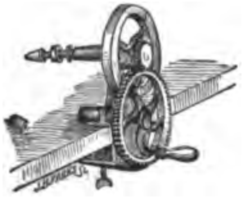
Portable Hand or Foot Lathe.



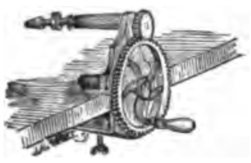
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

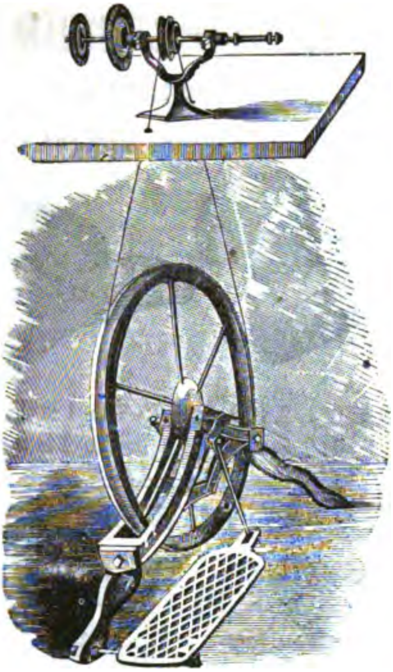
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

☛ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Baltimore.

The Diamond Fly Wheel and Lathe Head.

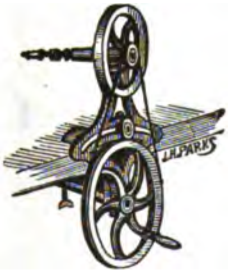


DIAMOND FLY WHEEL.

This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.
PRICE..$8 00

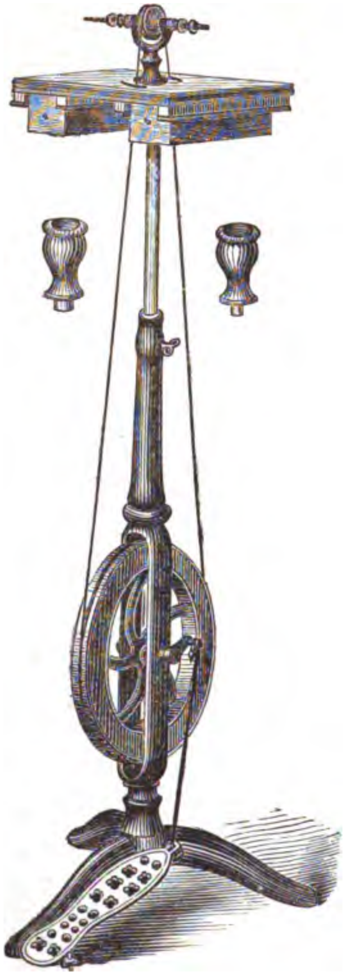
DIAMOND FLY WHEEL AND HEAD.
Complete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel, with brass washers and two chucks complete. Weighs only four pounds.
PRICE..$4 50

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

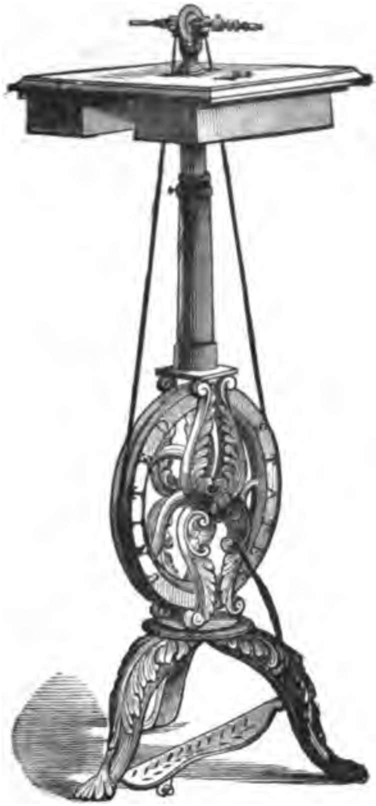
☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
86 W. Fayette Street, Baltimore.

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding teeth and polishing plates.

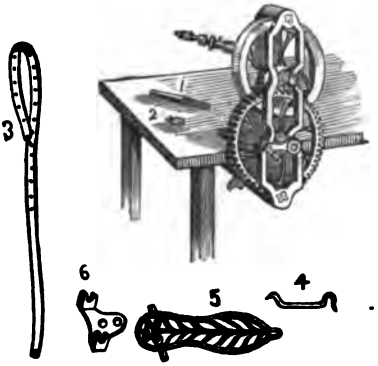
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut, - - -	$16 00
" " " " Long " - - - -	16 00
" Stand only, including Cord and Coupling, - - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

Portable Hand or Foot Lathe.



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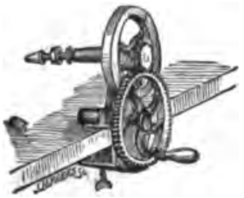
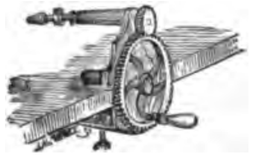
Price, complete, - - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



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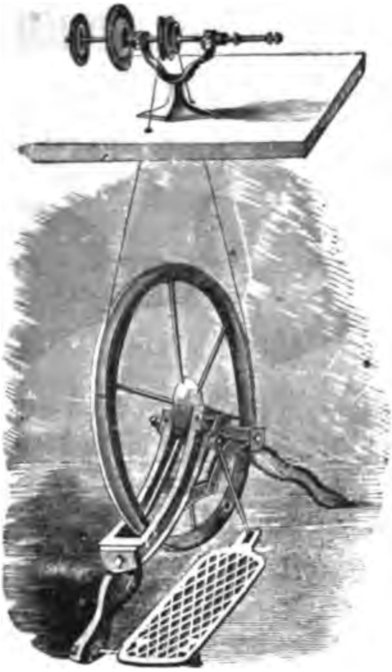
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Baltimore.

The Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

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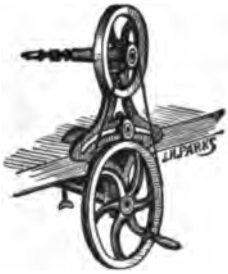
PRICE..$8 00

DIAMOND FLY WHEEL AND HEAD.

Complete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel, with brass washers and two chucks complete. Weighs only four pounds.

PRICE..$4 50

BRITANNIA IMPRESSION CUPS,

LONG HANDLES.

We Manufacture the following Sizes and Varieties:

UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.

ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
PEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.

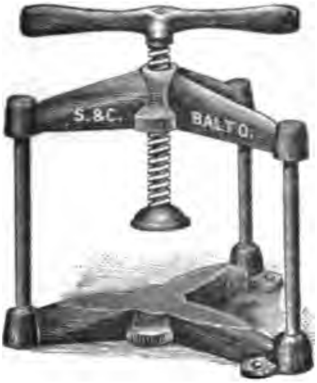
PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE........................Each...................25cts.

SNOWDEN & COWMAN,

No. 86 West Fayette Street. Baltimore.

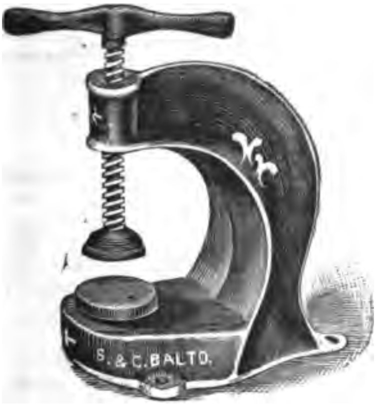
SNOWDEN & COWMAN'S
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

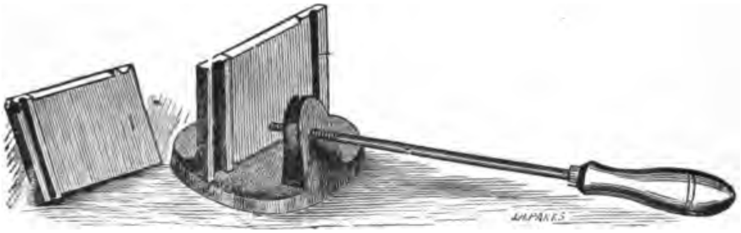
No. 2, New Style.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price, • $1.50

SNOWDEN & COWMAN'S

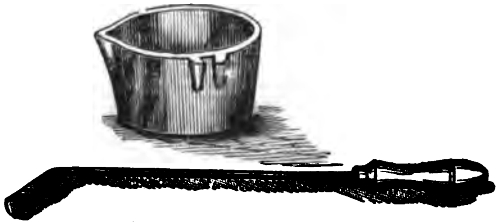
INGOT MOULDS.



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar.	$2.25
No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Ladles and Handles.



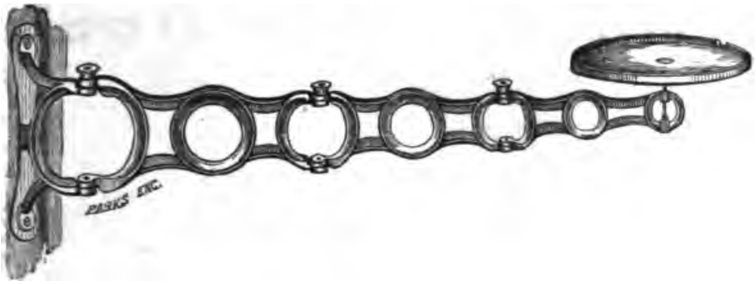
We make three sizes of Ladles; one handle will fit each Ladle, and is removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle....................	75
Nos. 2 and 3 Ladles, without handle, each..................	25
No. 1 large " " " "	40
Handles of wrought iron, each............................	25

SNOWDEN & COWMAN,
No. 86 W. Fayette St. Baltimore.

Snowden & Cowman's Extension Bracket.

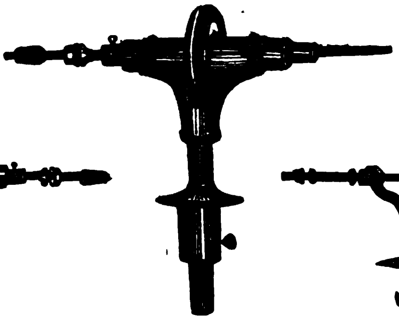


This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

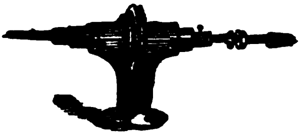
Price, Round Table as per cut,	**- - - - - - -**	**$6 00.**
Square " with drawers.	**- - - - - - -**	**8 00**

TABLE HEADS.

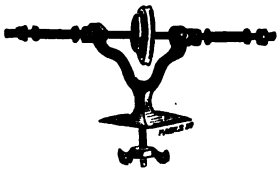
A.



B.



C.



A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table........................•........PRICE $5 00

B.—U. S. LATHE HEAD, **with holes in the base to screw to** any **table.**

PRICE—Short Spindle (as per cut B)................$4 00

" Long Spindle............................ 4 00

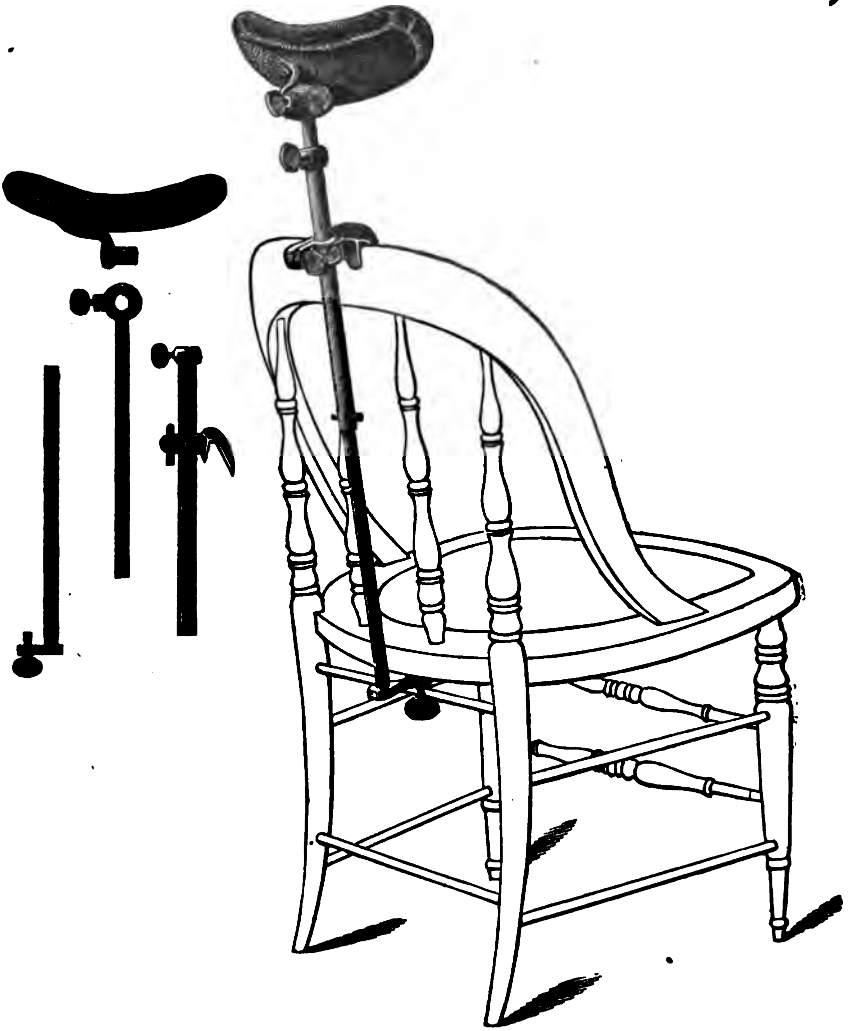
C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which **retain** the wheels and brushes, are of Brass. The spindle is of the best un-**annealed** hammered steel, and of the size to suit the holes in the wheels

PRICE................. ....$6 00

SNOWDEN & COWMAN'S

—IMPROVED—

Portable Head-Rest,



This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 00.

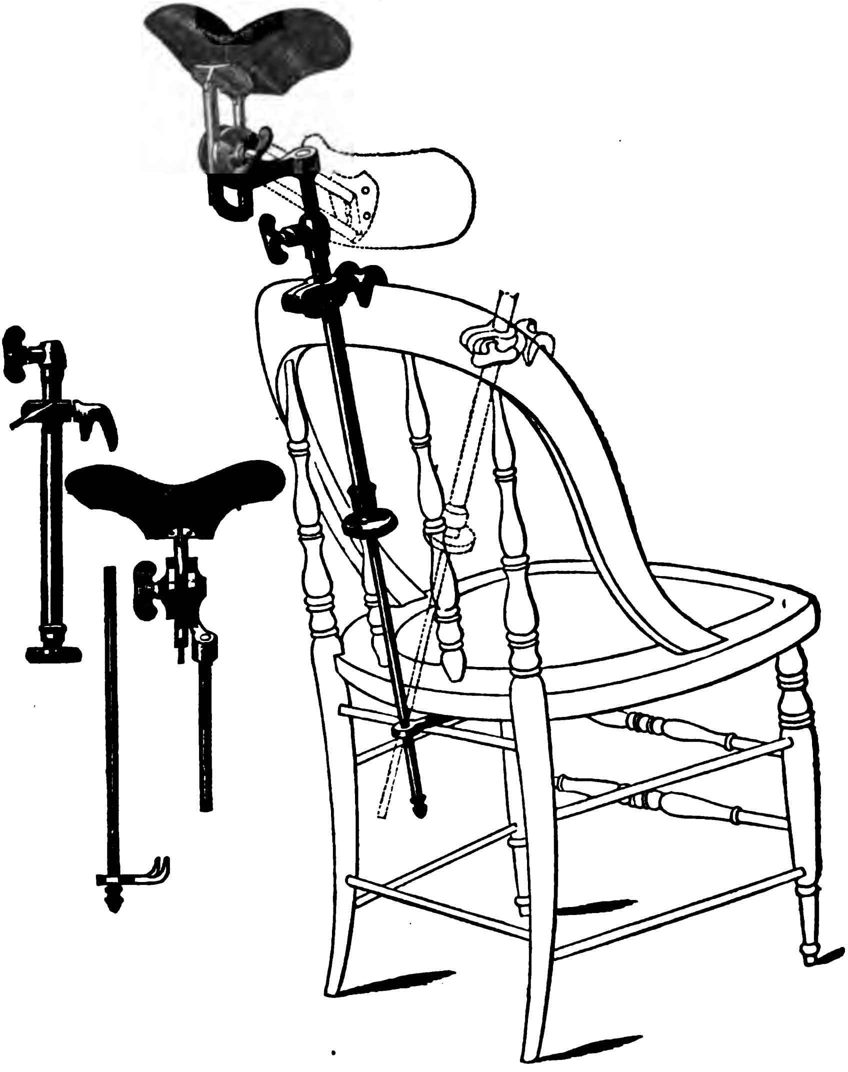
SNOWDEN & COWMAN, 86 W. Fayette Street.

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,

[PATENTED JUNE 22nd, 1886.]



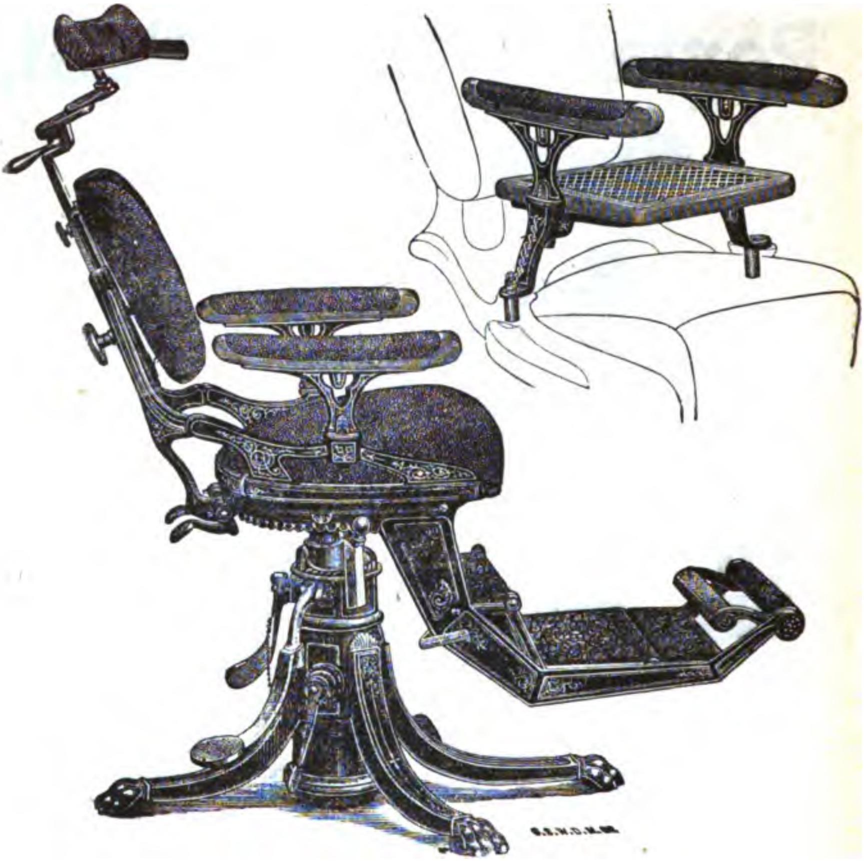
PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN,

86 W. Fayette Street, Baltimore Md

The Improved Wilkerson Chair.



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

PRICES.

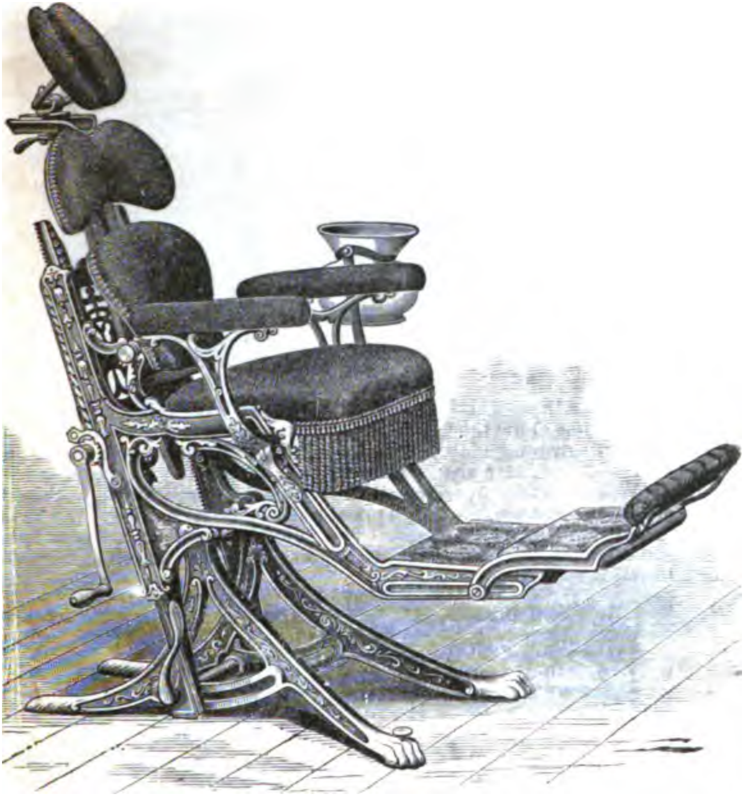
In best quality Green, Crimson, or Maroon Plush	$180 00
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet	200 00
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match	210 00
In Crimson Plain Turkey Morocco or Leather	180 00
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests	210 00

BOXING FREE.

For Sale By SNOWDEN & COWMAN. Baltimore. Md.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$130.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

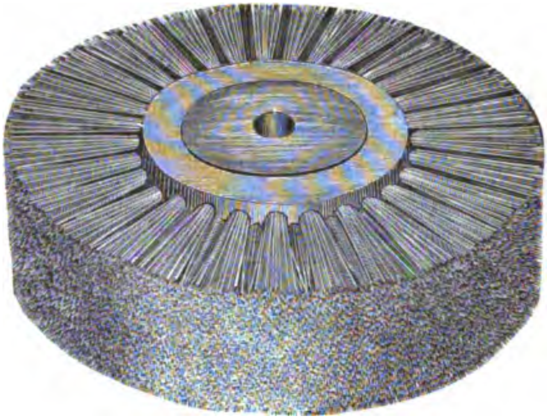
PRICE.

In Corded Upholstery.	$105.00

We supply either style of the Morrison Chair, with or without Casters. When ordered with Casters, the price is $10.00 extra.

For Sale By SNOWDEN & COWMAN, Baltimore Md.

NOVELTY BRUSH WHEELS.



Cut Shows No. 29.

The hubs of these wheels are made of leatheroid. They are strong and will not split nor allow the bristles to push back or become loose. They have also a decided advantage in their small size, which permits their use in polishing articles of irregular shape without risk of marring or scratching. The Novelty Wheels, while superior in quality and neatness of finish to those with the ordinary wood hubs, are only very slightly higher in price. We have the sole agency for the dental trade. The following numbers are now in stock, sizes and numbers the same as those of our wood hub wheels, In ordering state the style wanted.

STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1¾	inches	diameter,	each	$0.20
“	4	1	“	“	“	1⅞	“	“	“	.20
“	1	2	Rows	“	“	1½	“	“	“	.20
“	2	2	“	“	“	1½	“	“	“	.20
“	5	2	“	“	“	1⅝	“	“	“	.25
“	6	2	“	Medium	“	1⅝	“	‘	“	.25
“	8	2	“	“	“	1¾	“	“	“	.25
“	10	2	“	Soft	“	1¾	“	“	“	.25
“	7	2	“	“	“	1¾	“	“	“	.25
“	9	2	“	“	“	1¾	“	“	“	.25
“	11	2	“	“	“	1⅞	“	“	“	.25
“	14	2	“	“	“	1⅞	“	“	“	.25
“	13	2	“	Medium	“	1⅞	“	“	“	.25
“	12	2	“	Stiff	“	1⅞	“	“	“	.25
“	19	2	“	Soft	“	2⅜	“	“	“	.30
“	22	2	“	“	“	2⅜	“	“	“	,30
“	21	2	“	Medium	“	2⅜	“	“	“	.30
“	20	2	“	Stiff	“	2⅜	“	“	“	.30
“	18	3	“	Soft	“	2	“	“	“	.35
“	17	3	“	Stiff	“	2	“	“	“	.35
“	26	3	“	Soft	“	2¼	“	“	“	.45
“	25	3	“	Stiff	“	2¼	“	“	“	.45
“	50	3	“	Soft	“	3	“	“	“	.55
“	30	4	“	“	“	3	“	“	“	.60
“	29	4	“	Stiff	“	3	“	“	“	.60

CONVERGING BRISTLES.

No.	16	3	Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.35
“	15	3	“	Stiff	“	2⅛	“	“	“	.35
“	24	3	“	Medium	“	2¾	“	“	“	.45
“	23	3	“	Stiff	“	2½	“	“	“	.45
“	28	4	“	Medium	“	3	“	“	“	.60
“	27	4	“	Stiff	“	3	“	“	“	.60

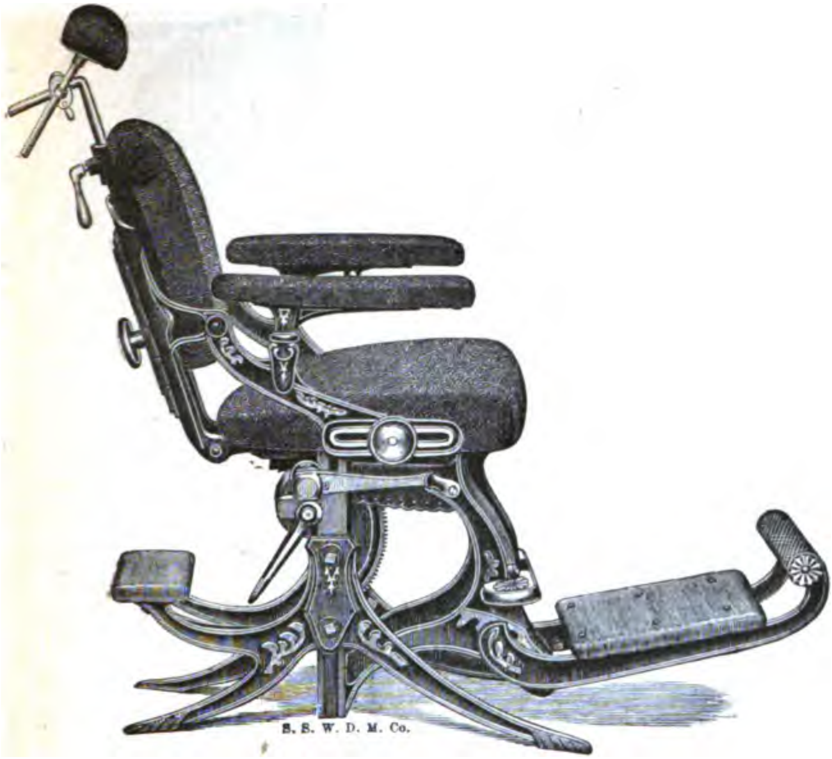
STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2	Rows	Stiff	Bristles,	1¾	inches	diameter	each	0.25
“	66	2	“	“	“	1⅞	“	“	“	.30

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2	Rows	Stiff	Bristles	1¾	inches	diameter	each	0.25
	65	2	“	“	“	1⅞	“	“		.30

THE CYCLOID CHAIR.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

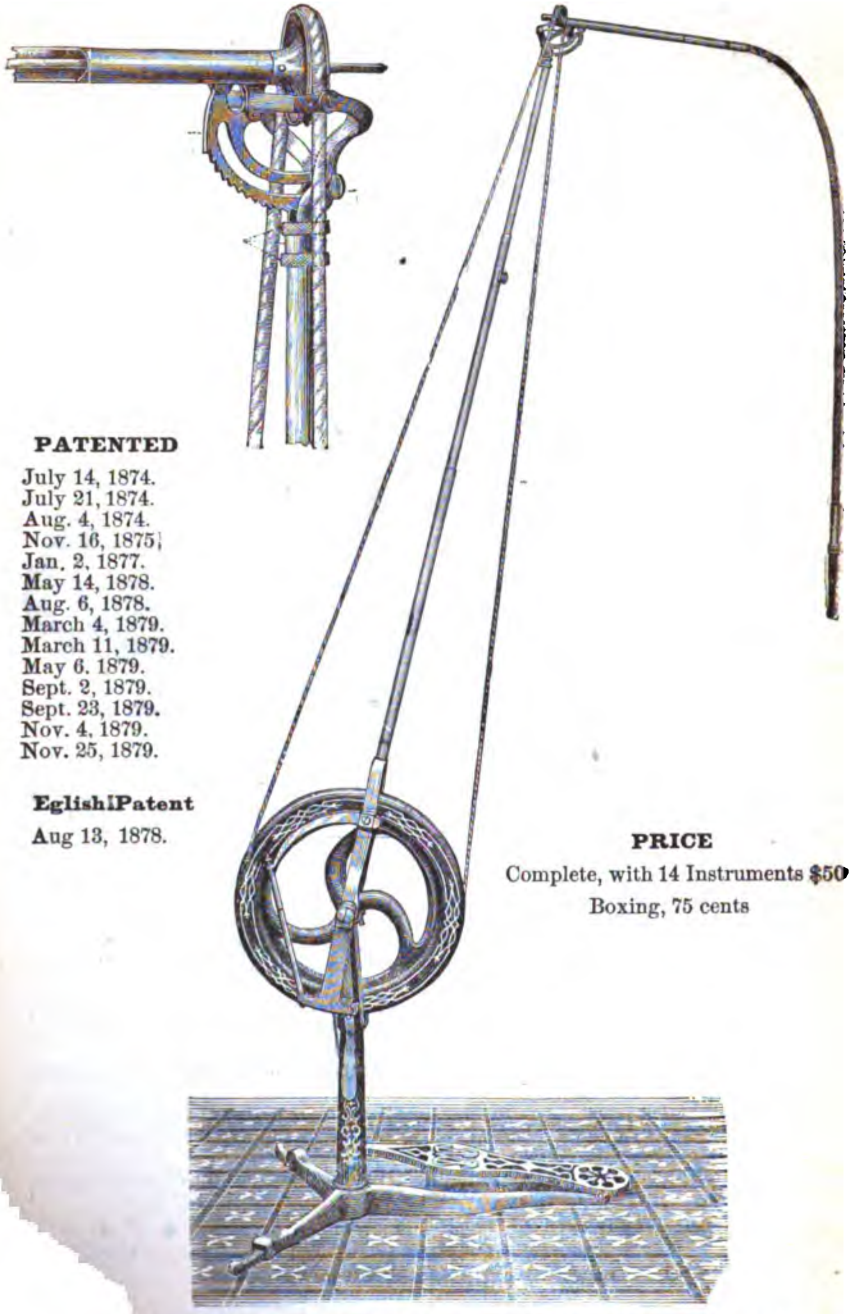
The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material,	• •	$ 80.00
" " " Best Quality Maroon or Green Plush,		95.00

For Sale By SNOWDEN & COWMAN.

THE S. S. WHITE IMPROVED DENTAL ENGINE.



PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
Jan. 2, 1877.
May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish Patent

Aug 13, 1878.

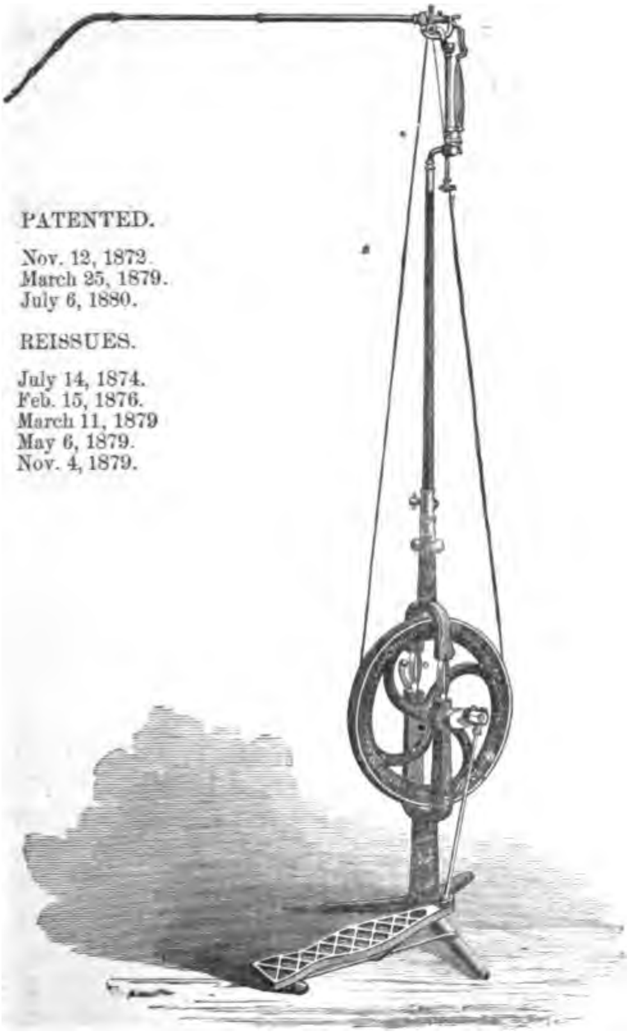
PRICE

Complete, with 14 Instruments $50

Boxing, 75 cents

SNOWDEN & COWMAN, 86 W. Fayette Street Baltimore

THE JOHNSTON DENTAL ENGINE.



PATENTED.

Nov. 12, 1872.
March 25, 1879.
July 6, 1880.

REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879.
May 6, 1879.
Nov. 4, 1879.

PRICES.

Engine	$40 00
Boxing	75

For Sale By SNOWDEN & COWMAN,
86 West Fayette Street. Baltimore, Md.

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill orders for various kinds of Printing, such as

BILLHEADS, CIRCULARS, LABELS,

STATEMENTS, HEADINGS, CARDS,

TAGS, BY-LAWS, ETC

SNOWDEN & COWMAN,

No. 86 West Fayette Street.

SNOWDEN & COWMAN'S

DENTISTS' CASE BOOKS,

For Recording all Operations in Dentistry,

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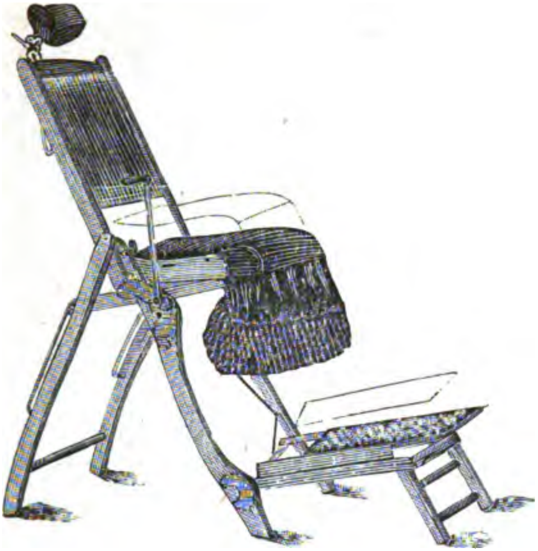

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brane will thus revive even after the laspe of years, provided there has not been such exposure as would change its organic character or cause disintegration. He alludes to the well-known fact that various forms of spores and bacteria are known to lie inactive for indefinite periods of time, and then, when brought again into the proper environment, to revive, grow and proliferate. He claims that the reviving of the peridental membrane on implanted teeth is of a character analogous to this and that to this essential fact is due the success of such operations.

In opposition to this view of Dr. Younger and his supporters, many others (the writer having been one of them) have claimed that there is no union of tissue, but that implanted teeth are held in position simply by that form of articulation known as "Gomphosis," just as a nail is held in place when driven into wood. When the implanted tooth is crowded into position there is sufficient contact between the walls of the prepared socket and the roots of the tooth to hold it in place temporarily. It is of course impossible to prepare a socket which will exactly fit the irregularities of the root of a tooth. But after the tooth is in place, cicatricial tissue begins to grow and fills up the spaces intervening between the root of the tooth and the surrounding wall of bone. In this way the force or pressure, described as gomphosis, is brought to bear evenly over all parts of the root and the tooth is held firmly in position. It is undoubtedly true that normal teeth are retained in place in the same way, but whether gomphosis constitutes the entire fastening or not is a mooted question. The writer formerly believed it was, and at a meeting of the Cincinnati Odontological Society held last June, advocated the covering of the roots of implanted teeth with lead, pure gold, or some other such substance, which could not be absorbed by the circulation, believing that were this not done, absorption of the root would be the ultimate result in the majority of these operations; as it is in cases of transplanting and replanting. A dentist of California (whose name did not appear) is reported in one of our late journals as advocating this theory of covering with lead as being the best method of preserving the root from destruction. He has inserted some teeth thus covered, but with what success I have not learned.

Having had the pleasure of meeting Dr. Younger during the past summer, the writer had quite a lengthy talk with him concerning this topic. The doctor, being of a good-natured temperament, bore patiently with the persistence of your humble servant while the latter was arguing earnestly in favor of his theories against the Doctor's practical experience.

My own experience in implanting is quite limited, including but three cases all told. But in this limited experience there has been sufficient evidence that my former theories were incorrect. In one of these cases, the operation having proved a failure to a great degree, the tooth was extracted after having been in position over four months. Upon examination it was plainly to be seen that a considerable attachment had already been formed on one side by the peridental membrane. This tooth (a superior lateral) was implanted the 4th of last October, the original tooth having been lost about ten years previously from pyorrhœa alveolaris. The space between the canine and the central had closed to some degree so that it was necessary to select a very small lateral to insert between them. The only tooth available small enough for the place had been partially denuded of periosteum from calcareous deposits as well as by scraping. At that time, however, I did not deem this a matter of consequence. The tooth having been implanted it was cemented to the adjoining teeth by oxyphosphate. It progressed very nicely for about three weeks when pus began to exude from under the gums on the labial surface. This continued in varying quantities up to the time of extraction, in spite of all local treatment. It was a matter of much surprise to me, and especially under the circumstances of so free a discharge of pus, to find that a considerable zone of peridental membrane had attached itself to the bone. This attachment was so marked as to cause considerable pain in extracting.

These facts of attachment and pain on extracting are identical with those observed by Dr. Younger himself in his own personal experience, he having had an implanted tooth in his own mouth for the space of seven months, and then having had it extracted for the purpose of having the membrane examined. He experienced considerable pain in the removal, in consequence of its having been quite firmly attached.

The tooth of which you have had the history in connection with my own practice is here for your examination. The portion covered with membrane is easily distinguished from the other surface.

Now, while these two or three teeth which have been extracted and were found to have become attached to the bone do not prove conclusively Dr. Younger's theory of the reviving of the perio-dental membrane to be true in every case, yet these, with the numerous other cases of his and others, which have been implanted and have become attached and seem to be entirely successful, indicate very strongly that such is the normal tendency and result in all cases properly operated upon, and this form of repair of tissues is becoming an accepted fact in physiology.

It must be remembered that in this process of repair, after implantation, that time is necessary for the work to be done As to the length of the time of repair and the continuance of the accompanying symptoms we have only to recall the clinical history of the recovery of a fractured bone in other parts of the body; this we know varies in different persons and is controlled by circumstances and conditions. It should be borne in mind also that such cases are often attended with more or less traumatic fever, and the appearance of that symptom in connection with the operation of implantation should not occasion surprise.

I have two other cases to present, both of which are doing well, one having been implanted last May and the other the fifteenth of November last. The May case is a right superior bicuspid. The original tooth having been extracted only three months, there was a small depression where the socket had been and the absorption of the alveolus had not been very great. But the new socket had to be drilled into the bone much the same as though the tooth had been out for years. The new tooth was kept cemented in position most of the time for about four weeks and has become perfectly firm, as you may see by examination.

The November case is also a superior bicuspid on the right side. This was left without ligature, cement, or any kind of fastening, in order to determine, if possible, whether fastening was necessary. It has not done so well as the preceding case, but still is doing well enough to remain and to be useful. At the time of this operation I took from the place where this tooth now is, about the eighth of an inch of the apex of the old bicuspid which was fastened only to the gums.

It might be said by some that these cases were simply transplanting, but they are far from it, for in each one a new socket was made for the reception of the implanted tooth.

In reviewing the history of the few operations of this kind, we conclude as to the point of practically, that we may certainly class implantation as among the legitimate operations coming under the head of Dental Surgery.

Many persons have mistakenly supposed the operation of implanting is very similar to transplanting and replanting. The fact is that it differs from both these operations in almost every particular. To discuss this matter fully would require a special paper. But a point or two in this connection may be suggested here. About the only similarity in the three operations is the fact that a natural tooth, the root of which is still covered with periodental membrane, is used in each. In transplanting and replanting, a tooth is fitted into the natural socket of the original tooth

Very soon, however, to our dismay, her breathing grew shorter and shorter, and then ceased altogether. I sprang to her, and began the process of artificial respiration, by standing behind the chair, and a little above her, and placing my hands, one under each breast, at the margin of the short ribs, and pressing upward, and then relaxing the pressure alternately. Keeping up this process for a few seconds without any appreciable benefit whatever, the doctor hurriedly suggested that we lay her on the floor, and we lost no time in complying with his suggestion. As soon as she was in this position, the doctor preceeded with the artificial respiration without any apparent benefit.

Her eyes were closed from the start, and she was as limp as a rag, and her countenance, by this time, had assumed the livid hue of death.

We saw at once that something must be done and done quickly. So I gathered her by the legs and lifted her up, her head hanging down, and her legs resting one on each of my shoulders. All this time she had not breathed once, and I distinctly remember of wondering to myself, how it could be possible for anyone to be so long without drawing a single breath and live, for it seemed to me an age, therefore, I said to the doctor it is no use, she is dead.

He placed his ear to her chest, and said her heart still beats, then said I, we will work as long as the heart continues to act. At this critical moment, she showed manifestations of returning life, by a feeble respiration, accompanied with a suppressed groan, and at a long interval another, and then another. I held her in the inverted position until her breathing seemed to be thoroughly established, which produced a sense of relief to us both, more easily imagined then described. We placed her again in a horizontal position on the floor, and, of course, thought that now she surely was all right. The doctor exclaimed, "My God, that is the closest call I ever had." But how soon were our cherished hopes frustrated.

In a few seconds, after we had laid her down, we had a repetition of the same condition. I took her again by the legs, and held her in an inverted position as before. This time we were sure that she had gone to the "bourne whence no traveler ever returns." But as good luck, combined with our efforts, the doctor doing what he could at artificial respiration, fortune once more smiled upon us, and she breathed again, with a groan, and a second time we breathed easier, with the hope, that surely, this is a permanent return, and we again laid her on the floor. But how were we startled soon after, to see her relapse into a state of stupor, apparently more profound than before. This time the doctor laid her breast bare, by taking hold of her collar and dress, under her chin, making the buttons fly in every direction wtth a zip.

He gave her hypodermic injections of whiskey, and applied cloths wrung out of cold water to her breast, without effect. She laid there seemingly as lifeless as a corpse. By this time I felt considerably played out. A strong man from the country, who had come in to have some work done, was sitting by, looking on with intense interest. I asked him to take her up, as I had done, to which he readily consented, and held her in an inverted position as before, until her breathing was restored, when she was again placed upon the floor. Suffice it to say that the inverting process was resorted to the sixth time before continued respiration was restored.

When this was accomplished, we laid her on a lounge, and her respiration being quite feeble, the doctor gave her two or three more hypodermic injections of whisky. The heart's action also being very feeble, the doctor sent out and obtained some nitrate of amyl, and had her inhale a portion, with very happy effect.

During the whole time we kept watch of her tongue, and saw that it did not drop down her throat and rest on the epiglottis, and thereby produce strangulation.

It was at least twenty minutes after she began breath ing regularly, before she showed the least evidence of returning consciousness. Observing the clock, I discovered that it had been about an hour since the doctor began the administration of the ether.

Nothing further occurred in reference to the case to mar our expectations of a speedy recovery of our patient, and right glad were we, when we felt assured that a restoration was at hand.

She commenced taking the ether at a few minutes after 2 p. m., and a little after 5 p, m., she walked home, a distance of five or six squares.

Squib's ether was used, said by surgeons to be the best in the world, and less than three ounces were given by actual weight, and from a can the doctor opened for the first time in the office, in my presence.

An exceedingly interesting account of a case, called "Sims' Case," related by J. Marion Sims himself, in a paper read before the British Medical Association, of the syncope and resuscitation of the patient. He was operating upon a French Countess—young, beautiful, accomplished—for vesico-vaginal fistula, the result of her first accouchement. The account is extracted from his paper, and given in vol. 3, page 125 of American System of Dentistry, by Dr. Litch, in his able and exhaustive paper on Anæsthesia and Anæsthetics, which will richly repay any man to read.

In Sims' Case, chloroform was used instead of ether. But to all appearance, the syncope; as the result of anæsthesia, was the same; and in the treatment of our patient, we endeavored to follow the same course adopted in "Sims' Case." As the great Nelaton said, who was standing by watching and giving orders on that occasion "certainly, there is nothing else to do."

About two weeks previous to our experience with this lady, Dr. Bond, one of the prominent physicians of this city, had a similar experience with her in the office of Dr. Hamilton, one of my neighbor dentists. This time she had but one tooth extracted. After an hour or more of vigorous effort on the part of the two doctors, she came out all right. When she was fully restored, the doctor very emphatically endeavored to impress her with the fact, that she was not an acceptable subject for the action of ether, and for her never to attempt to take it again under any circumstances whatever, reminding her, that if she did, in all human probability, she would wake up in another state of existence.

She gave neither Dr. Kelsey or me the least intimation of the advice and caution that Dr. Bond had given her in reference to taking ether again. If she had, she would have met with a prompt refusal.—*Dental Register.*

ARTICLE III.

SOME PRACTICAL POINTS IN THE PHYSIOLOGY AND PATHOLOGY OF THE FIFTH PAIR OF NERVES IN RELATION TO INVETERATE NEURALGIA.

BY DR. STRETCH DOWSE.

He did not propose either to follow in the footsteps or tread on the heels of Mr. Victor Horsley's paper of the previous session, which dealt almost exclusively with the surgical aspect of the question, but in the belief that all cases were not adapted to surgical interference, rather to invite attention to and provoke discussion on the medical phase of the subject.

Having somewhat fully reviewed the latest knowledge obtained, both anatomically, physiologically and pathologically; and having quoted one or two cases bearing upon the question—notably a very important, and, as it were, test case of paralysis of the fifth cranial nerve, sensory and motor, published by Dr. Ferrier in the *Lancet* of January 7th, 1888, and bristling with clinical acumen and physiological knowledge—he entered upon what he regarded as the most interesting part of his paper, prefacing it with a reference to the trophic influence of the fifth nerve[*] They were all possibly aware of the existence of a disease known as loco-motor ataxy, but it was necessary to state that ataxy in locomotion did not always exist. There were many objective signs and symptoms, however, connected with the disease which should be of the greatest possible importance to the dentist. The fifth nerve, it must not be forgotten, was a spinal nerve, and its sensory connections were so extensive, and its reflex relations so vast, that it was hardly possible to conceive an essentially sensory disease like that of loco-motor ataxy existing unless the fifth nerve were involved. The involvement of the fifth nerve in loco-motor ataxy had never been recognized to the extent that he (Dr. Dowse) thought it ought to be. It did not seem to have struck neurologists that inveterate neuralgias of the fifth nerve were in part due to sclerosis of the ascending fibres which run into the trigeminus from the posthorn of the cervical spinal cord. He was visiting within an hour of each other two patients; one was suffering from the lightning pains of loco-motor ataxy and rubbing the skin from his thigh, so great was the agony; the other was suffering severely from tic of the gums and parts supplied by the infra-orbital nerve. The definition of the pain in each case was precisely similar; it came without the slightest warning, and was of the most intense character, and left as it came. There could be no doubt in his mind as to the absolute relationship between these two pains,—

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[*] The trophic root of the trigeminal nerve arose from a mass of cells at the side of the aqueduct of Sylvius, or, as some would say, the trophic fibres originated in the gasserian ganglion itself. It was clear that they had much to do with the gums and their mucous membrane, and with the tooth pulp.

viz., of loco-motor ataxy and of facial tic, with or without muscular spasm, known as tic-douloureux.

The most prominent signs of loco-motor ataxy were—ataxic movements; fulgurating pains; localised hyperæsthesia; ocular paralysis; numbness and other dysæsthesia; anæsthesia; staggering with closed eyes; failure of sexual power; absence of tendon reflex; rectal and vesical paueses; gastric crises; laryngeal crises; vesical crises; severe arthropathies; amaurosis; complicating transverse myelitis; spinal congestion; paralytic dementia; vesical catarrh; pupillary changes.

Of these signs he would only draw their attention to (1), pupillary changes; (2), ataxic movements; (3,) fulgurating pains; (4), severe arthropies; (5), absence of tendon reflexes.

(1.) In ataxy the pupils were invariably very small, dilated sluggishly if at all, but contracted when the eye was accommodated for a near object; again, one pupil might be very large, while the other might be very much contracted.

(2.) The patient was unable to maintain the equilibrium in the dark, or when he was made to stand erect with the eyes closed, or he felt himself losing his balance when washing his face.

(3.) Fulgurating pains were, in his experience, very diagnostic of the disease, and he had called attention to the fact that these fulgurating pains were in their character and intensity precisely analogous to the pains of the face due to the fifth nerve, and known as tic. He would ask, was inveterate neuralgia of the face due to sclerosis of the cervical branch of the fifth nerve, to its nuclei of origin in the medulla, to its connection with the sensory trigeminal nucleus which lies at the level of the pons, or to its ganglia? or, on the other hand, was it essentially peripheral?

He maintained, from analogy, that the lightning pains of the limbs, which were considered as common to sclerosis of the posterior columns of the spinal cord, were identical in character and causation to those pains of the sensory division of the fifth nerve, and known as tic of the face, epileptic neuralgia and tic-douloureux.

(4.) Associated with some class of loco-motor ataxy were found a peculiar state of the joints, known as Charcot's joints. The pain was characterised usually by enormous swelling from effusion into the joint. It was quite painless, even upon active movement, due to insensibility of the structures with wearing away of the articular ends of the bones. He would ask, was there anything analogous to this in the alveolar processes of the jaws, as well as the tooth fangs or dental pulp?

(5.) The pupillary changes might be accompanied with other phenomena, known as tendon reflexes, the most common of which, and the only one to which he cared to call attention, was absence of the "knee reflex." This was elicited by striking the patella tendon below the knee with the tips of the fingers when the leg is semi-flexed, or when one leg is crossed over the other. In health, when this tendon was tapped, the leg was thrown forwards and upwards, but when sclerosis of the sensory channels of the spinal cord existed, the leg was absolutely immovable. He would not weary them further with the signs of loco-motor ataxy; the practical outcome of importance seemed to be in regard to the wholesale extraction of teeth. When in doubt as to the value of wholesale extraction, examine the pupil of the eye, the absence or presence of the knee reflex, and the balancing power of the patient when standing erect with the eyes closed. If the signs were present indicating sclerosis of sensory nerve fibres, or if there were marked hysteria, unlimited extraction would not seem to be justifiable; if, on the other hand, these signs were absent showing that peripheral irritation was the cause of pain, then, and then only, could any amount of operative interference be recommended as likely to be of benefit.

As to treatment of neuralgia of the fifth nerve, Dr. Dowse quite endorsed Professor Horsley's opinion with regard to "nerve-stretching," but as to "avulsion" he was somewhat sceptical. The best advice which he (Dr. Dowse) could give was to be found in the thoughtful and experienced remarks of their past learned President, Mr. Tomes, in the discussion of Mr. Horsley's paper, "Relief from severe and persistent pain quite justifies any ordinary surgical procedure, but I cannot quite see how relief means cure. How often do we see this word written to a case when the word relief would be far more appropriate."

In the treatment of neuralgia, as far as drugs were concerned, Dr. Dowse put great faith in the value of opium, when it agreed. Broadly, he treated facial neuralgias by drugs as follows:—When of the supra-orbital nerve, 20 or even 30 gr. doses quinine, just before the time for the paroxysm to make its appearance, and every other night a pill of calomel and gambooge, a plain non-alcoholic diet and plenty of milk. When of the middle and inferior maxillary nerves, he gave iodide and bromide of potassium, with 1-2 drachm doses of gelsemium three times a day. M. Goubler stated at the Societe Therapeutique, January 25th, 1877, that he did not know of a neuralgia of the fifth nerve, even tic-doloureux, which had resisted aconotine. Whilst speaking of drugs in neuralgia of the fifth nerve and in the fulgurant pains of ataxy, he (Dr. Dowse) had been much pleased with the effect of antipyrine in one scruple doses every half-hour until the pain was relieved.

He had for some time injected an ethereal solution of ergotine with marked good effects in trigeminial neuralgia and sciatica. He usually injected 1 gr. ergotine dissolved in 5 mins. ether; in facial neuralgia he injected into the scalp immediately behind the ear, and in sciatica he pushed the needle of the syringe well into the sciatica nerve. He had used a 1 per cent. solution osmic acid in the same way with much the same result. Dr. Dowse referred to a pamphlet by J. Montaign Didsbury, translated by Mr. Boyd-Wallis, on "The Treatment of Inveterate Neuralgia of the Fifth Nerve," advocating the division and cauterization with the actual cautery the auriculo-temporal nerve, on the assumption that "it is the shock to the grey axis of the medulla, produced by cauterization, that effects the cure; the application is made to the helix of the ear." Dr. Dowse thought there was much to be said in favour of the treatment.

Finally, a few words on the application of galvanism. He preferred the voltaic or galvanic current to Faradization —more frequently he combined the two, the voltaic current being in excess cf the Faradaic. He never used strong currents, 2, 3, or 4 milliampere of the continuous current being sufficient. For neuralgia of the first division of the fifth nerve, he plugged the nostril with very soft sponge or cotton wool, and into this he inserted a fine wire electrode (positive pole), which he fixed the negative electrode in the form of a long plate to the service-dorsal region of the spinal cord, and then completed the circuit. The current should be passed ten, twenty, or even thirty mins. at one sitting, and continued daily for a week after the pain had disappeared. Practice and discrimination was necessary in the application of the current. Faradization alone was worse than useless.—*London Dental Record.*

ARTICLE IV.

DISEASES OUTSIDE THE MOUTH THAT AFFECT THE ORAL STRUCTURES.

BY DR. J. Y. MARTIN, ANN ARBOR, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

The teeth first begin to form in the early part of fœtal life. Beginning about the seventh week, the process gradually goes on until by the eleventh week have the germs for the set of milk teeth. There are variations in some cases, but these are the usual periods. These germs are of elements we little suspect. The hardest portions are composed of soft-cells. They are composed of epithelial cells at first loosely grouped together.

There are certain laws that govern the development of all parts of the body. They are most marked in the fœtal state. As long as Nature's laws are not interfered with, everything goes on smoothly. But if a law is broken we find its influence on the fœtus. It is very sensitive to impressions. If there is an arrest of development at any time, the organ that is then developing will be absent or deformed. Great care should be exercised at this time, since any irregularity may show its effects upon the fœtus and result in various deformities, as cleft palate and harelip.

Maternal impressions during fœtal life may produce these results. They may be on the nervous or physical system. If on the former, we may have various mental and nervous disturbances. If they affect the physical system, the organ in process of development will be absent or imperfectly developed. What are the effects of disease in the mother or in the fœtus? The relation between them is so close that whatever is good for the one is good for the other and whatever is bad for the one is bad for the other. Hence diseases that prey upon the mother during the fœtal life of her offspring may produce lasting impressions upon it. Thus the child may inherit from its mother certain diseased conditions, as a weakened digestion, nervous temperament and other conditions that will interfere with the nutrition and growth of the child.

After birth, as a result of a few weeks's fever, the child's teeth may be destroyed; for example, scarlet fever, small pox, or typhoid fever may so alter nutrition and the secretions as to produce these results. These results are not confined to infant life but may effect the adult as well. The teeth contain organic and inorganic matter. If they are not properly nourished, the organic matter is diminished and the teeth become more friable than is normal, and are not able to withstand external influences.

The subject of dentition is looked upon by many as if all the disturbances in the system at this time were due to the eruption of the teeth. The child is supposed to live upon milk food up to this time. When the teeth are being erupted, there are certain important changes taking place in the intestinal canal, and the disturbances in the mouth are but local manifestations of general disturbances. We have changes in the oral cavities, to be sure, but at the same time, new glands are forming and other changes are taking place along the alimentary canal. The child is being prepared to digest a different kind of food and the digestive organs must be changed accordingly.

What is the condition of the child during this transitional period? Probably nature intended there should be little disturbance in the mouth and system generally; and this would be so were it not that hygienic laws have been violated either before or after birth. Whenever we violate Nature's laws, we must pay the penalty. At this time there are changes not only in the alimentary canal and mouth, but in the nervous system as well, and these changes are in proportion to the amount of interference with nutrition at this period. The nervous system becomes more susceptible, and impressions made on the child are more marked. This accounts for the convulsions and the various nervous disturbances at this time.

The eruption of teeth is a physiological process and in itself should produce little disturbance. But as the child is erupting teeth we are apt to attribute all these disturbances to this, forgetting that all these changes are taking place at one time, while the eruption of teeth is but a small part of the cause. The tongue is an indicator of general disturbances. But why look at the tongue only? Other changed conditions in the oral cavity are indicators as well. Acid secretions in the mouth are as strong indicators of abnormal conditions in the system as are the changed conditions in the tongue. In nine cases out of ten acid secretions in the mouth mean some change outside of the mouth. Whenever we have tumid gums more often the cause exists outside of the mouth than within. When we have tartar upon the teeth and the gums are tumid, we say the tartar is the cause of the tumid gums, while in reality the presence of the tartar is due to the excess of the carbonate or phosphate of lime in the secretions, and this excess is caused by a changed condition without the mouth.

Now as to saliva. In its normal state it is a bluish white, ropy secretion, very little heavier than water. Normally it is alkaline in reaction. It is never in a marked degree and without some special cause, usually outside the mouth. Normal saliva changes so rapidly that if we wish to examine it, it must be done at once. Abnormal saliva may contain pus, blood, carbonates and phosphates of lime, etc. From the excess of the carbonates and phosphates of lime the tartar is produced and the diseases that come from this accumulation. The offensive character of the tartar is due to the presence of organic matter. Normal saliva of the child is similar to that of the adult, except that alkalinity is more marked. If the saliva become acid, its effects upon the oral structures are more marked.

In the common summer complaints of infants, such as indigestion and diarrhœa, the secretions of the mouth are generally acid. There is an excess of acid in the system, due either to over-production or lack of proper elimination. When there is an excess of acid in the system, due either to indigestion or other causes, it irritates the alimentary canal and the mucous membrane of the mouth. Thus results increased irritation. If the secretions in cholera infantum or diarrhœa be examined, they will be found in a marked degree acid. The food, instead of being digested, undergoes acid fermentation. When acids are in excess they are absorbed into the system. The buccal secretions consequently may become more acid and the saliva rendered neutral or acid in reaction.

Causes of acid secretions in the mouth, according to Wright: 1. Inflammation of the mucous membrane of the mouth. 2. Diseases of the salivary glands. 3. Diseases in which there is an excess of acid in the system, as rheumatism and gout. 4. Indigestion or dyspepsia.

In inflammation of the mouth, we first get under secretions, then over-secretion; excess of buccal and other secretions. Then if the mucous membrane breaks down by ulceration we have pus mingling with the secretions. The acid in excess is due either to excess of buccal secretions, diminished flow of saliva or changed saliva.

Catarrh has a marked effect on the glands of the mucous membrane wherever it occurs. It causes excessive secretion and later the secretions may become abnormal from over-work of the glands. This secretion may pass into the stomach and mingle with the digestive secretions and alter their condition.

Acid secretions favor the development of certain parasites, which cause one of the worst forms of ulcers in the mouth. Thus the result of another cause acts in producing secondary diseases in the oral cavity.

Another cause of acid secretions is disease of the salivary glands. They may be affected so as to cause diminution in the action of the glands and either diminish the alkalinity or change reaction to acid. One salivary gland may be diseased and secrete abnormally, the other may be normal; then we may have acid secretions.

In rheumatism and gout, there is an over-production of acid in the system. Over-production of acid in the system may end in change of salivary secretion, so that instead of being alkaline it becomes acid. It has been tested and found to be as stated. We notice this change in the mouth. We do not always know its cases. It is often attributed to disease of the liver. It is claimed that when there is an excess of acid secretions in the system it is generally due to a lack of proper elimination of effete matter from the system.

Indigestion or dyspepsia.—It may be either atonic or variety. The former is due to lack of force in the digestive organs; the latter, to inflammation or congestion. What is the result? Food passes into the stomach at the temperature of 98½°, and if not properly digested undergoes changes that will increase the derangements: If the secretions and physiological actions are normal, the food is digested; if not, a long train of ills results. Whatever the cause may be, the results are about the same: we have imperfect digestion and as a result acid and gaseous fermentation. As a result of this gaseous distention of the stomach, food is not properly mingled with the secretions, and this increases the difficulty by retarding still more the digestive process. Also by the distended condition of the stomach and bowels, increased pressure upon the diaphragm results, the chest cavity becomes narrowed; the great venous vessels from the head are pressed upon. Blood will be pumped into the head since the arteries are not so compressed, and, as it cannot return, we have permanent congestion of the head, face and oral structures, and from these may result changes in the oral structures. Indigestion or dyspepsia exists but a short time before the secretions in the mouth become changed, and in many cases in a marked degree, acid. Some claim that as the teeth are developed from the epithelial structures they are affected the more by the change in the secretions.

During gestation there is frequently a marked disturbance of the digestive organs: indigestion, marked nausea, vomiting and sometimes total arrest of digestive process. The secretions of the mouth in this condition become changed in a marked degree, and in some cases muriatic acid is found in them in addition to other acids, even when vomiting does not take place. It has been noticed for years that during gestation the oral structures and especially the teeth suffer greally. One author said, many years ago, "A tooth for a child." More recent authors claim that the destructive process is often still greater than that during the period of gestation, all of which is due to changed nutrition and altered secretions, which in turn are due to indigestion or dyspepsia.

The effects of acid secretions upon the teeth are too well known to you as dentists for me to speak of them in detail. What interests you most is, Where and what are the causes? Nine times out of ten the causes are without the mouth. To point out some of these has been my purpose in this brief talk.

From our present standpoint, it is easy to see how ineffectual alkaline mouth-washes are for the relief of a patient who is suffering from acid secretions in the mouth which are destroying the teeth. It would be like pinching the tip of the tail of a snake to kill the snake.

Not unfrequently the dentist will say: "I have done the mechanical work to the best of my ability, yet I find that the fillings will not stand." All dentists have that experience. When the work is done well and the filling will not stand, or the teeth decay rapidly, the cause is not, as a rule, in the mouth; but the trouble is due to changed recretions in the mouth or lack of proper nutrition. The teeth must be properly nourished; if not, they become more vulnerable, are more apt to decay, and decay more rapidly when once started.

As to treatment.—To treat the patient scientifically, we must treat each disease on its own merits. It is not expected that the dentist will treat all the diseases that produce changes in the mouth, but it is his duty to be able to recognize the trouble and advise the patients to have treatment. By so doing, he confers a boon upon the patient and at the same time protects his own professional skill or reputation.—*Ohio Dental Journal.*

ARTICLE V.

DECIDUOUS TEETH AND THE EVILS OF THEIR DECAY AND LOSS.

BY DR. GARRETT NEWKIRK, CHICAGO.

[Read before the Dental Section of the American Medical Association.]

As the potter forms his beautiful designs in plastic clay, so nature forms all the organs of the body. At first they are soft, little more in appearance or consistency than so many bits of jelly. By slow degrees they are brought to the requisite density of foundation, framework and superstructure.

The harder the tissue, the longer the time of its development and the slower its changes. The permanent teeth are the hardest structures in the body. Because the permanent teeth are to be the hardest tissues of the body, they must have time for growth and maturity.

Formed first in the soft state their density depends on the slow deposit of lime salts, particle by particle. The process will require for its final completion nearly half a lifetime. A structure for a thousand years cannot be built in two years. The teeth of prehistoric men still remain in mounds where even bones have crumbled. To supply the wants of the child while these are building, nature has provided a deciduous set.

The law of existence as to the temporary tooth is this: Each has a legitimate successor elected to take his seat at a certain time. The first should remain till the time of the second. The deciduous central incisors should remain till the seventh year, the laterals till the eighth, the molars till the ninth or tenth, the cuspids, last of all, till the tenth or eleventh year. From the age of seven to eleven or twelve nature intends the child to have a mixt set of teeth. Whether it be true or not that she abhors a vucuum," she certainly despises a gap in a row of teeth. One office of the teeth, especially in early life, is to support one another. A row of teeth is something like a row of books—remove one, the others tend to fall together. Now mark this point: If a temporary tooth be prematurely lost while its successor is imperfectly calcified and unready, one of several undesirable things may happen: First, the tooth may fail to come down, then the space is lost by the falling together of the adjacent teeth, eruption may be thus retarded, or, as sometimes happened; entirely prevented; or, the teeth may erupt inside or outside the line of the arch, causing an irregularity; or, it may erupt too soon, imperfectly calcified, and so be readily attacked by decay.

Most of the cases of protruding cuspids so frequently seen are caused by the premature loss of the temporary. An exception is where the temporary cuspid is retained *too* long, producing the same result. The rule is that the temporary cuspid should remain in the mouth till the child is eleven years old, sometimes longer. It is safe to say that, till the temporary teeth are well in place, the indications of nature are plainly against the free use of solid food. When the teeth are in place, nature is ready for the introduction of a more substantial diet than milk.

The uses of the temporary teeth are the same as of those that follow. They were created because they were needed. The food of the child needs the facility for mastication. The premature loss of a tooth is a loss to mastication and digestion. The same material want which called for the *existence* of the tooth calls also for its use and *preservation*..

The troubles which proceed from diseased teeth in the adult follow from the same cause in children. Whatever causes nervous irritability in children we all know should be avoided. Very few people realize how much they suffer from neglected teeth. The eruption of the teeth is far less apt to produce reflex disturbance than their decay aft eruption. Nothing is better calculated than a congeste pulp to cause pain, insomnia, general nervousness, and irritability. Such disturbances continuing, indigestion, malnutrition and intestinal troubles follow. Convulsive tendencies are also increased. Within two years I have seen a case of chorea in a child ten years old, associated with diseased teeth. The filling of these, with protection to several nearly exposed pulps, was followed by speedy recovery. Since the attention of ophthalmologists and otologists has been given more to the cause and treatment of reflex nervous influence, it has been found that diseased teeth in children, as well as in adults, are often the real source of troubles referred to the eye and ear.

Parents usually neglect their duty to their children's teeth. They do it not wilfully, but through ignorance. The physician is supposed to know about them, but is apt to forget the teeth of his little patients. The dentist is not consulted till the mischief is done, and too often he lacks the definite knowledge, patience and skill to do the children justice. Decay is permitted to go on, associated with more or less irritation and reflex disturbance, till the pulp of the tooth dies. Then the putrefaction of the dead pulp tissue begins with the evolution of poisonous gases. If these do not find escape through the cavity of decay they pass through the end of the root into the investing tissues, causing inflammation and abscess. What people call a "gumboil" is an opening for the discharge of pus from an abscess connected with the root of a neglected tooth with a putrefying pulp. The pulp is discharged almost daily and mingles in the fluids of the mouth. It is mixed with the saliva and food and swallowed. It may or may not be poisonous; it certainly is not wholesome. The teeth thus affected are tender on pressure; that is, the tissues under the root are sensitive and painful when the tooth is touched. The swelling of their underlying membrane makes them sometimes protrude a little when the child attempts to bring his teeth together in mastication. The sore ones touch first; therefore, he avoids chewing, and swallows his food as best he can. He is likely to contract the habit of bolting his food, and this habit may cling to him long after the existing cause has been removed.—*Items of Interest.*

ARTICLE VI.

THE INFANT-FOOD PROBLEM.

BY WM. B. ATKINSON, A. M.; M. D.,

[Professor of Diseases of Children and Sanitary Science in the Medico-Chirurgical College, Philadelphia.]

[Read in the Section on Diseases of Children, at the Thirty-Ninth Meeting of the American Medical Association, May 10, 1888.

To the general practitioner everywhere, there constantly comes the question, What means shall be employed to prevent the terrible mortality among infants deprived of their natural food, the mother's breast-milk? As it is in very many cases impossible to place the child outside the walls of a large city, this want of proper hygienic surroundings acts as one great factor in the production of disease. But perhaps the most active cause of disease is the exhaustion of the vital powers from the want of those articles which, being properly and readily assimilated, aid to maintain the body in its highest and healthiest condition. We all know that, other things being equal, that child which has been able to keep its system in the best state, its blood rich and pure, its muscles plump and firm, is sure to pass through an epidemic of children's affections either entirely unscathed or suffering only from a slight attack, readily throwing off the disease and never being troubled with the sequelæ.

Defective nutrition, then, is the predominant factor in the causation of the fearful mortality everywhere observed among children. We need only point to the statistics of children's hospitals, foundling asylums and similar institutions to show the truth of this proposition.

To us, as physicians and sanitarians, as citizens earnest for the welfare of this great Republic, this comes with powerful import. An additional fact also appeals to us when we learn that the vast majority of these are offspring of the native born, while those who survive are largely the children of foreigners. This is shown by the valuable statistics of such investigators as Dr. Nathan Allen. Though we are compelled to admit that other causes, and one a very potent factor, produce the great disproportion between offspring of natives and foreigners, yet it must be admitted that the truth of our original proposition still is evident, that defective vitality causes a vast majority of deaths among infants, and even in children of larger growth.

The latter fact is constantly shown by the great mortality which prevails when, by reason of short crops or other causes, the people are unable to procure the food needed to maintain their systems up to par and thus resist the inroads of disease.

It goes without saying that the infant should be raised on its mother's milk whenever possible. When, for any cause, this fails, then comes the question, what shall be the substitute? Abroad the milk of asses and goats is in quite common use. Cow's milk, being that most easily obtained, is most largely employed in this country. This being the fact, we next come to the consideration as to how the two kinds of milk differ, and what is needed in order to cause that of the cow most nearly to approach that of the human being.

Cow's milk contains more proteid matter, more fat, more mineral matter and less sugar. and as a rule, in health human milk is alkaline, while cow's milk is often slightly acid. One special difficulty with cow's milk is that its casein is more or less likely to form an insoluble mass by contact with the gastric juice, while the casein of human milk is in part a peptone, and forms a very delicate coagulum when in contact with the gastric juice.

The effort is always to produce a food for infants closely resembling in its composition the mother's milk, and the nearer this is reached in all its details, the more surely will such food prove wholesome and valuable to the infant.

Our idea of a standard infant food, then, would be produced as follows: Be sure to obtain the milk of a healthy cow. Just here we may premise that we do not believe in the common fallacy, "one cow's milk." The mixture of the milk of several healthy cows is more sure to give an article of real value. Undoubtedly, many in this audience can substantiate the claim that it is most usually the pet cow, from which is obtained the milk which is put up for the sick baby, that receives all the banging, hurrying and pelting, and, as we all know, is thus likely to yield a milk which may actually be poisonous in its nature. The best combination would be pure milk diluted with sufficient pure water to reduce the relative proportion of albuminoids and mineral constituents most nearly to that of human milk, then partially peptonize or digest it, and finally add a soluble carbo-hydrate with sufficient alkali to produce as close a resemblance to breast-milk as may be. We must not forget that peptonizing milk does not relieve us of the need of being sure that the milk is at the outset pure and fresh.

The milk supply of large cities has now become one of the great problems of the day. Churned in the cars to the city, then more thoroughly churned in the wagons over the wretchedly paved streets, distributed in many cases from doubtful cans by persons of much more doubtful appearance as to their own cleanliness; the flavor often aided by the puffing of a cigar or filthy pipe on the part of the distributor, the article is received in many cases in a receptacle of equal doubt as to cleanliness, is is placed, perhaps, in a food chest or so-called refrigerator, exposed to the atmospheric contact of other articles of food. Is it to be wondered at that the milk becomes of a very doubtful form as to its propriety as an infant aliment?

To a certain extent, these objections are met by the new plan of delivering what is called "whole milk." The milk is very carefully placed in glass jars immediately after being drawn from the cow, these, being quite full, are hermetically sealed so that there can be no opportunity of churning or adulteration, or the absorption of odors or disease germs. For children who have passed the age of infancy, I have long been in the habit of urging the employment, particularly during hot weather, of what is called "evaporated milk." Its claims were that it was the milk from healthy, well-fed cows, and, being of a density greater than cream, churning and souring were less likely to occur during its transition to the city. Again, it was very much less ready to absorb or appropriate the odors, etc., to which it might be subjected. I have found this more easily borne by the child, and repeatedly I have been compelled to substitute it for the "condensed milk," where a certain proportion of sugar is added in order to preserve the article.

For these reasons, Prof. Vaughan urges the use of dried milk solids, that is, they can be transported without injury from any distance, and, if properly prepared, may be kept without putrefaction occurring. Now, if such pure milk from perfectly healthy cows were partially predigested by the process of peptonisation with fresh pancreatine, and to this dextrine added, thus supplying the carbo-hydrate, we would then come as near the production of a proper food for infants as might be possible in the absence of the breast-milk.

By recent researches, we have been taught that dextrine is the best form of carbo-hydrate, as it is non-fermentable and does not irritate the stomach of the infant, is easily assimilated, and, unlike cane sugar or maltose, is not likely to take on acid fermentation. Roasted wheat flour has long been employed and recommended as an article of food for infants, and particularly where diarrhœa is present. The reason of this is because this process converts the starch of the flour into dextrine.

The malt sugar or so-called "Liebig foods" are no doubt often valuablé, particularly in infantile constipation, for their laxative effects, but are extremely liable to continue a diarrhœa or increase it. When these are used for their laxative effect, it is safer to use them alone rather than with milk, lest their fermentative tendency be aggravated by the presence of too great a quantity of albuminoid matter.

I am incited to this remark by the remembrance that the "Liebig foods" do not of themselves meet the requirements demanded for infantile nutrition, unless with the addition of cow's milk. By an examination of the analyses of such mixtures, we find that they add no essential to cow's milk; nor do these foods act chemically upon the casein, nor physically by reason of their solubility; and, as I have before remarked, they may give rise to disorders of digestion in consequence of the readiness with which they take on fermentation.

Farinaceous foods are of course out of the question, because of the absence of ptyalin in the secretion of the salivary glands in the earlier years of infancy. The addition of starchy matters to cow's milk with the purpose of rendering the coagulum less dense and more easily broken up in the stomach, as has been recommended by some authorities, is wrong in principle; it really adds an indigestible element, which cannot fail to act as a foreign body sure to produce fermentation, acidity, diarrhœa and the usual train of evils.

The milk foods, when diluted with water in accordance with directions, should correspond in nutritive value with human milk. Now, that this correspondence should be more nearly perfect, they should also be partially predigested or peptonized, in order that the casein may be rendered more acceptable. It is also necessary that sugar in some form should be added.

In peptonizing milk, it is of the greatest importance that the pancreatic extract which is employed should be pure and fresh. The odor of some digestive ferments as furnished by the stores is such as to give rise to the suspicion that they are already assuming the putrefactive tendency. In fact, it is a very difficult matter to preserve them, as it is well known that the products of the pancreas are much more readily decomposed than any known animal substance. Hence the greatest care will be necessary that there shall not be the slightest possibility of the presence of the presence of putrefactive germs in any of these articles than may be employed to aid in the preparation of the diet for infants. The peptonizing of milk, although apparently a very simple matter as practiced in the laboratory. yet is scarcely feasible in the household.

Another point is of great importance. Malt sugar is eminently prone to absorb mixture, and hence it should not be combined with dried milk and then put in bottles or other forms of package for family use, because, as these packages are only partially used at one time, the balance is extremely liable to absorb moisture, resulting in fermentation, and this is more especially the case in hot weather or when kept in a hot room.

We cannot too strongly urge upon all who are compelled to prepare food for infants the great, the imperative necessity of using only water that has been boiled. To the medical man, the reason is plain, yet it would not be amiss for him to explain in each instance why this should be done. Just here it is equally important to see that the water is not cooled by the addition of ice, as we may thus return at once to the water the very organisms which the boiling was intended to expel. I am impelled to this remark by the remembrance of an inspection, just made for the State Board of Health of Pennsylvania. The subject of complaint was the ponds from which the ice was obtained to supply the demands of a large town. These ponds were filled with water from a stream really nothing but a drain for a full gradeyard, one or more slaughterhouses, a large number of cesspools which were in contact use, and a large area of swamp land.

In diluting any form of infant food we should give positive, definitive quantities. Undoubtedly all of us have encountered many instances where the child was really starving, while apparently receiving a large quantity of fluid. The fact is that the dilution had been carried too far.

It is unnecessary for me to occupy your time with further points as to times for feeding, nor of necessity for using bottles, etc.

Before closing, I may remark that, in my investigation of foods for the preparation of a paper which may be read elsewhere, I have received from my friend Chief Medical Purveyor Baxter, of the United States Army, a tabulated analysis of some fifteen forms of foods. Of these, only four contained more than 10 per cent. of nutritive material, thus showing that even here we are likely to be deceived, and to be employing an article as useless for its proposed purpose as the too largely diluted food of the infant already mentioned.

In conclusion, permit me to say that it has long been my custom, not only in my practice, but also in my teachings to urge the giving of less medicine, using it only when imperatively demanded, and to insist upon the value of proper hygiene and proper nourishment, believing that these alone, in many cases, will at once place the child on the road to health, and if persevered in will, as a rule, maintain it there.—*Jour. Am. Med. Association.*

ARTICLE VII.

A CASE OF EPITHELIOMA OF THE GUMS, WITH A FEW REMARKS.

BY FRANK LANKESTER, L. R. C. P., M. R. C. S., L. D. S., ENG.

The following case came under my notice some few months ago at the National Dental Hospital. Though a purely surgical affection, it, nevertheless, had a dental origin, and will therefore, I feel sure, prove of considerable

For about a week patient progressed most favorably, when pyæmia suddenly set in, to which he rapidly succumbed. The disease was so far advanced that, had the man recovered from the operation, it would have probably recurred, but the operation would have prolonged his life, and would have prevented the endurance of much subsequent suffering.

This unfortunate termination of the case was much to be regretted, but it does not alter the fact that, had the nature of the disease been recognized in the first instance, the man would probably have been alive and well now. For the operation would have been a comparatively small affair, though, of course, a free excision would have been necessary. There would have been less danger, too, of pyæmia, &c., and the man would have been in a better state of health generally.

In cases like this it is, of course, obviously all-important that an early and correct diagnosis be made. The earlier the stage of the disease, the more difficult necessarily does the diagnosis become, and, therefore, the greater the need of being thoroughly well acquainted with the disease, its diagnostic points, and its serious prognosis.

Epithelioma of the gums, primarily, is somewhat rare, but when it does occur, it will probably be in connection with some long continued irritation, such as that caused by an ill fitting plate, a carious stump, &c., nor should we forget that the sharp-pointed edge of a tooth is one of the most frequent causes of cancer of the tongue. Thus, probably, the dentist will be the first man called upon to give relief in these cases; and if he be able, without delay, to correctly diagnose, and advise as to the treatment of, an epitheliomatous ulcer when present, it will be a great source of subsequent satisfaction and value to both dentist and patient, but especially to the latter.

Side by side with this case we may place an exactly similar one mentioned by Sir John Tomes in the third edition of his "Dental Surgery" (p. 737). Here, also, the disease originated "in the edges of the socket of a dead tooth." But it was early recognized, and the tuberosity, with the hard and soft palates, were excised with the satisfactory result that there has been no recurrence, "a success due to its early recognition."

What, then, are the chief points that will help us to this end? We should regard with very grave suspicion any ulcerated surface in the mouth, with induration of the surrounding tissues, occurring in a male over forty years of age, and which has not yielded at all to specific or other treatment, but in spite of it continues slowly but surely to increase in extent, even after any possible exciting cause has been removed. We should notice the general appearance of the patient, and inquire carefully as to whether there be any family predisposition to cancer, and whether the patient be losing flesh. Examine carefully if any of the lymphatic glands be involved, and lastly, we may call the microscope to our aid. Scrape the surface of the ulcer and mix with a drop of water; place on a slide and examine carefully under a moderate power. If the ulcer be epitheliomatous in nature, you will most probably find here and there aggregations of epithelial cells, the so-called "birds' nests" or "nest cells." These, then, are the chief points, and it surely behooves us all to bear them in mind.—*London Dental Record.*

ARTICLE VIII.

GALVANOPLASTIC TOOTH CROWNS.

BY DR. C. E. DIEHL, PITTSBURGH.

The galvanoplastic art introduces into the dental laboratory an entirely new method for the manufacturer of gold tooth crowns, which shall be in every detail fac-smiles of the natural organs. A gold tooth crown, as made by interest and be of some practical value to the members of our profession. The patient, on presenting himself, complained simply of a "rather sore gum." I elicited the following history:—George H., aged 55, a coachman, with an excellent family history, said he had always enjoyed thoroughly good health himself. During the last twenty years he had gradually lost most of his teeth, so that in the upper jaw only the two centrals and the right canine now remained. Up to about a year ago, however, the left canine root was *in situ*, but covered over by a vulcanite artificial denture, which he had been wearing for several years previously. He did not remember having had any trouble whatever with this left canine root until about eight or nine months ago, when, without any very obvious cause, it became somewhat loose; whereupon he began to "work it about" with his fingers, so that, two or three months later, the root came away altogether. The socket, however, never healed up in the usual way; on the contrary, the vacant space caused by the loss of the tooth had been steadily, though very slowly, enlarging ever since. During the last month the ulcerative process had progressed more rapidly; there had been more tenderness and pain, together with a fœtid discharge. He had previously experienced very little pain. After the root came away, the artificial canine no longer fitted closely up to the gums, so that, three weeks previously to my seeing him, he had consulted a dentist; but the latter merely added some more vulcanite, so as to form the usual artificial gum. He thus covered up the ulcerating surface, and boxed in the foul discharge, fondly hoping that the "rest" thus afforded would enable the gums to resume their normal condition. A week later, he went to a dispensary, where he was given some liniment, which was, of course, worse than useless in his case. He next sought our advice, but not until three valuable weeks had been lost, owing to the culpable ignorance or surgical inexperience on the parts of the dentist and the "dispensing doctor." The disease was so far advanced that there could have been no difficulty whatever in diagnosing or at least suspecting it, yet the patient was not warned of his condition nor even sent elsewhere for another opinion. And yet men ask what is the use of a dentist knowing anything about general surgery.

On examination, patient had a well marked sallow and cachectic appearance. There was a slight fullness and puffiness over the left cheek, whilst, beneath the angle of the lower jaw, was to be felt a hard glandular mass about as large as a walnut.

Within the mouth, the left central was very loose, and the right partially so. In the situation of the left canine was a hole extending upwards towards the antrum, and nearly large enough to admit the tip of the little finger. The surface was "dirty" and ulcerating, as was also that of the gum in the immediate neighborhood, whilst as far back as the tuberosity the surface of the gum was much thickened and nodular, though not actually ulcerating throughout its whole extent. The buccal mucous membrane was becoming involved by the disease, and the tissues all round the growth were much indurated. There was not much discharge, but the breath was very offensive. Patient said he was losing flesh. There was not the least doubt as to its epitheliomatous nature, so I sent him on to St. Thomas's Hospital, warning him that he must not play with the disease any longer. He was at once admitted, under the care of Mr. Clutton, Two or three days later, patient was put under chloroform, and Mr. Clutton removed the lower half of the left superior maxilla, whereupon it was found that the growth extended over to the right side of the septum nasi—a very serious discovery, pointing strongly to a probable recurrence of the disease, owing to the increased difficulty in getting rid of all the tissues involved, besides greatly prolonging and increasing the severity of the operation; the lymphatic glands were left for subsequent removal, when the patient should have recovered from the shock of the operation.

handle previously inserted from the negative rod, and is known as the cathode.

From the positive rod is suspended a plate of metal, such as the bath contains in solution, which at present is copper. This plate is known as the anode. It will be noticed that in a few moments the whole surface of the tooth pattern (cathode) will be coated with a fine film of copper, the thickness of which is entirely under the control of the operator. It is best, however, to allow the deposit to accumulate to the thickness of ordinary writing paper.

The copper-covered tooth pattern is now taken out of the copper bath, rinsed in clear warm water and transferred to a jar containing about one pint of gold solution. The little rods perform the same office as before, except the copper plate anode is dispensed with, and one of gold or platina substituted.

If the battery and solution is in harmony, metallic gold will be deposited on the copper-faced tooth pattern in a few moments. The process is continued till the required thickness of gold is attained.

It usually takes about twelve hours treatment to complete the deposition of gold. The time, however, is of little consequence, as the process goes on without much attention.

When the deposit is of sufficient thickness, the work is taken from the bath, washed, buffed and burnished. The wire handle is now withdrawn, the crown carefully picked up with tweezers and passed rapidly to and fro in a vessel of boiling water. The fusible metal will melt and run out, leaving within the grasp of the tweezers a beautiful gold crown. If the crown is a little large at the neck, it should be replaced in the gold bath, with the outside of the crown protected from a further deposit by "stopping off varnish;" gold will then deposit on the inside, thereby reducing the diameter at its neck

A galvanic battery may be made of almost any kind of elements, Smee, Danniel, Bunsen, Grove, Grenet, or Le Clanche.

COPPER SOLUTIONS.

No. 1.—Stir a quantity of carbonate of copper in water, add cyanide of potassium, till the liquid becomes colorless.

No. 2. —Water 12½ parts, and cyanide of potassium, carbonate of soda, acetate of copper and bisulphite of soda, each ¼ part. Mix the acetate of copper in one-fifth of the water, add the water drop by drop at first. This salt is difficult to mix in the presence of a quantity of water. When the acetate of copper is dissolved, add the carbonate of soda. Add one-fifth more water and the bisulphite of soda. The liquid now becomes a dirty yellow. Add the remaining three-fifths of water and the cyanide of potassium. The result should be a colorless liquid. If after the cyanide is all dissolved and the liquid is not entirely colorless, the cyanide was not pure. To remedy the evil, add a little more cyanide. If we desire a perfectly limpid bath the solution must be filtered.

No. 3.—Sulphate of copper, 1 pound; and water 20 oz.

This bath must always be kept saturated, new supplies of the copper salt must be added. This is best accomplished by suspending a muslin bag containing the salt, in the solution. The addition of sulphuric, acetic or citric acid increases the conductivity and specific gravity of the solution, at the same time improving it materially.

GOLD SOLUTIONS.

No. 1.—Chloride of gold, 1 part; and cyanide of potassium, 3 parts, distilled.

No. 2—Phosphate of sodium, - - -	6 parts.
Bisulphate of sodium, - - - -	1 part.
Cyanide of potassium and Metallic gold, each - - - -	1-10 part.
Distilled or rain water - - - -	100 parts.

The metallic gold is first reduced to a chloride.

the swagging process, is nothing more than a metallic ferrule, with one end closed resembling a lead-pencil top. Cusps struck up in dies and soldered to the ferrule do not give it a tooth-like appearance.

There seems to prevail, unfortunately, a wrong impression as to which are the most important features of a tooth.

The greatest efforts have been directed heretofore toward making the cutting or masticating surface resemble the natural tooth, at the expense of the more prominent features.

The cutting and masticating surfaces contribute little, if any toward making a tooth look real. We notice, in the the teeth of elderly persons, the cusps and cutting edges are much—in many cases altogether—worn away; yet the teeth present a perfectly natural appearance.

We have paid too much attention to the soles of the feet, neglecting the more important features—the face of the tooth, the neck, the curves from neck to cusps, and lateral lines.

To imitate these lateral lines by the swagging process seems practically impossible. Because, the circumference of the tooth is smallest at its neck; consequently, if a swagging tool were inserted into the crown and the gold made to conform thereto, the tool could not be withdrawn.

To overcome such a difficulty and many others, we have recourse to the Hydroplastic Art: The art of depositing metal through the agency of dynamic electricity and suitable metal solutions.

In the manufacture of a gold tooth crown by the galvanoplastic method, care and some experience are necessary. Each operator must learn what his battery and solutions are doing; whethere there is too little gold or too little cyanide of potassium in the bath and whether the current of electricity is too strong or not strong enough.

By carefully observing the actions of the bath, the operator will soon learn to interpret the signs which they indicate.

The first step as in other methods, is to get a perfect measurement of the root to be crowned. Next, to select a well-shaped natural tooth of porcelain crown, that will nearly fill the space which the finished gold crown is to occupy.

A mold is made of the natural tooth or porcelain crown in plaster of Paris; a two-piece mold will answer in nearly all cases. A casting gate is then cut, the mould fitted carefully together and a tooth pattern cast of a suitable fusible metal.

The tooth pattern is then fitted into the space furnished by the bite for length, and to the measurement of the root. This is easily done.

The fusible metal tooth pattern is quite soft; an ordinary rubber scraper is the only tool necessary. Finish with a series of graded grit powders.

Bore a small hole into the top of the tooth pattern; do not let the drill pierce the cutting or masticating surface.

The hole is for the insertion of a brass or copper wire two or three inches long. The wire will answer for a handle. We are now prepared to put the tooth pattern into the various baths, providing the pattern is perfectly clean and free from any oil or grease. Too much care cannot be paid to cleanliness in all galvanoplastic operations.

The first bath is one of copper, made of a simple salt of copper, the sulphate for example, or a double salt of copper—the cyanide of potsasium and copper. The formula will be given further on.

Fill a glass jar, holding about one pint, with the copper solution. Lay two copper rods across the top of the jar; attach to one by a copper wire, the positive pole of a galvanic battery, and to the other rod the wire proceeding from the negative pole—generally zinc. The little rods thus become, one positive the other negative.

The tooth pattern which is to receive the galvanoplastic deposit is suspended in the copper bath by the wire surface, and returned it to the mouth. An assistant held it in position there. I then pushed the nozzle of a syringe into the end of the tube, and withdrew the plunger. Another assistant had plaster mixed with potass alum ready. This was poured into the syringe, the plunger was replaced, and the plaster injected into the fissures; then I withdrew the first part of the impression; and with good strong tweezers pushed the other part backwards as if down the throat.

Both halves of the impression were then placed in situation and then cast, and, to facilitate the getting at either side, the model was also taken in two parts. The model was then stearined, and the fissure filled, and an impression in sand taken, and thus Babbit metal models secured, on which a gold plate was swaged; bands fitted to the bicuspids, and light wires encircling the wisdom teeth, and a wire soldered into the plate, to fit into the left central incisor.

The six front teeth were fitted and backed, and at this stage the whole was fitted into the mouth, and found most satisfactory; they were then soldered and tried upon the model but the plate, from some cause or other, was very badly warped Probably the assistant had used too heavy an investment, that is, an excess of material, causing a twist that was retained by the solder. This was somewhat disheartening, because, with the teeth bands and pivot, it became a difficult matter to recover the fit. There, however, were only two ways for it—either to make a new one or to re-strike that one up again. I chose the latter plan, and proceeded thus:—I placed an iron wire in the pivot root, made up a mixture of asbestos, fireclay, and plaster of Paris, soaped the model, and took an impression, dried, and cast in Babbitt metal.

The pin was easily withdrawn, having been coated with whiting. The front part of the model was covered with fireclay, asbestos, and plaster of Paris, dried, and the lead poured over. This formed a chamber over the teeth and bands of the plate. So the plate, with teeth bands, pivot included, was restruck, and the fit restored. I have gone into detail, which may seem tedious to some; but I thought it might be interesting to others, and also instructive to those who did not know of this method, and therefore useful to them if a like contingency should be met with in their practice.

The bicuspids and molars of the lower jaw were all so irretrievably lost that for the present no cognisance was taken of them, and vulcanite blocks were rivetted on the plate as substitutes for the bicuspids and molars.

Holes were now punched in the palate of the gold plate, and a small piece of gold fitted to it, to which two gold screws were soldered, having small nuts working freely upon them. The object of this was to secure a hinge, also of gold, to which was attached the artificial velum. There is a small portion of the fissure covered by the anterior part of the hinge. This was mounted with rubber to act as an obturator. To the posterior portion of the hinge was adapted the artificial velum. At first my intention was to make this part in soft rubber, but further consideration made me determine to construct it in hard rubber. I believe that far better results may be obtained from soft rubber than is usual if it be packed in a tin mould, and vulcanized in dry heat, as obtained by the new-mode heater. There is as on cast metal, an impermeable skin compared with vulcanite cooked in steam. But the best cooked soft rubber will not wear so well as plain hard rubber, and will require renewing from time to time. For that reason I determined to make it of hard rubber, which I proceeded to do thus:—I attached the hinge to the plate, placed it on the model softened in boiling water some gutta-percha, and modelled up the velum. This I cooled and tried in the mouth, and, after some slight adjusting, I was satisfied with its position and its adaptation. Owing to the difficulty of packing it, it was flasked, so that the side parts were capable of being removed like cores, but it was found unnecessary to make use of them practically.

When the velum was finished, it was attached to the plate by the screws and nuts, and tried in the mouth, and the necessary pitch obtained by the rising of the stop pin. This, as you observe, is a contrivance for taking the weight of the case off the muscles when at rest. You will observe that part of it lies above the natural velum and part below; so that when the uvula is raised or depressed, the artificial velum is carried along with it, and thus fulfilling physiologically the purpose for which it was constructed.

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CHICAGO ILL

remnant of the corresponding tooth on the left. The wisdom teeth were small, malformed, almost useless things, and the ravages made upon the left bicuspid by decay rendered it difficult to make much use of it, so that the upper right was all that could be relied on for the purpose of retaining a denture in the mouth. I did not remove a single root, but cut the crown level with the gum; then I made a ferrule to fit the decayed bicuspid, and, after thoroughly filling the root, forced the ferrule up over it, up to and below the gum, and then filled it up with amalgam, and thus made it a good serviceable anchor. I also enlarged the nerve canal of the upper central incisor for the purpose of introducing a pivot, which would thoroughly prevent any unsteadiness anterio posteriorly in the denture. The fissure ran from the pharyngeal walls forward to about one inch and an eighth from the alveolar borders, or opposite the second bicuspid teeth, at which part the width of the fissure was three-eighths of an inch, and gradually widening towards the divided uvula, the two halves of which were about five-eighths of an inch apart; and behind, from the tensor palati of the left to that of the right, was about an inch and a-half, and from the pharyngeal wall to the uvula, about three-quarters of an inch. The anterior and posterior nares were in full view; and also the vomer and the inferior and superior turbinated bones.

I took an ordinary impression tray and some modelling composition, and procured an impression of the hard plate, reaching back as far as possible, but not allowing the material to flow into the fissure. I then struck up a very light impression tray from block tin, and soldered a handle to it; then added a tray of gutta-percha to its extremity. I then filled with plaster of Paris, placed a wire in the root of the central, and then introduced the plaster. I may here mention that the patient is very delicate, and owing to great sensitiveness, retching was easily provoked. I had to administer stimulants to keep her altogether, and also to paint the fauces, &c., with dilute phenol sodique, to abate the sensitiveness and retching.

When this plaster-impression was set, I removed it, then cut a hole in the tray, containing the plaster-impression; and through this I introduced an India-rubber tube, soaped the

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HIGHEST ORDER OF MERIT

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—AT—

VIENNA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,

—TO—

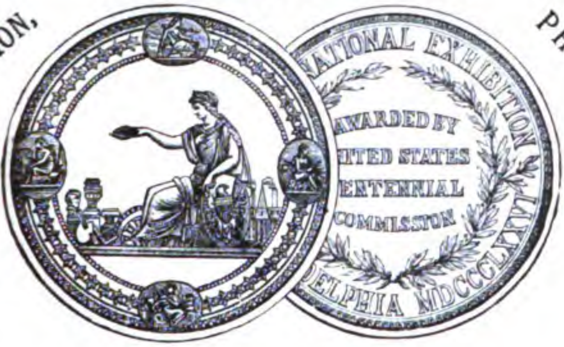
H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.

VIENNA, 1873.

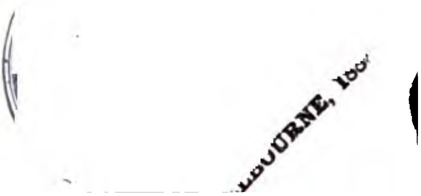
SANTIAGO DE CHILI 1875.



CENTENNIAL EXHIBITION, PHILADELPHIA, 1876.

PARIS, 1878.

AWARDED TO H. D. JUSTI FOR ARTIFICIAL TEETH.
SYDNEY,


LBOURNE, 188

causing his services as dentist to be indirectly paid by means of the sale of drugs or medicines, or who willingly and falsely claims to be in the posession of a license granted under this Act, or the Acts above mentioned, or shall falsely make use of names, titles and qualities calculated to convey the impression that he is authorised to practice the profession of dentist, or shall make use of any title calculated to convey the impression that he is a graduate of a college of dentists, may, upon complaint or information sworn to before a justice of the peace, made by a person of at least twenty-one years of age, be brought by a simple writ of summons or by a warrant of arrest in the discretion of any court of competent jurisdiction, and, upon conviction of any of the offences above mentioned, be condemned to pay a fine not exceeding two hundred dollars, with costs, for each offence, and in default of payment of such fine and costs, the defendant may be condemned to an imprisonment in the common gaol of the district in which the sentence has been pronounced for a period not exceeding three months, unless the said penalty and costs be sooner paid.

"If the person so found guily of any of the offenses above enumerated should be again accused and convicted of any of the offences above enumerated, he shall then be condemned to pay a fine not exceeding four hundred dollars including costs, for each offense, and, in default of payment. to an imprisonment not exceeding six months, unless the said penalty and costs be sooner paid.

"No person so unlawfully practicing the profession of dentist shall recover before any court of justice any sum of money for the professional services so rendered, or for the medicines or other materials supplied in such unlawful practice.

"The fines imposed by this Act shall be payable to the treasurer of the Associstion, and shall form part of the funds of such Association.

"Nothing in this act shall be construed as restricting the privileges conferred upon physicians and surgeons in the province of Quebec by the various Acts relating to the practice of medicine and surgery therein . . . . . but in the event of a physician or surgeon desiring to practice as a dentist and to be publicly known as such, he shall before doing so be obliged to obtain a license from the Board of Examiners of such Association, by submitting to an examination upon the mechanical and practical part of dental surgery and by paying the fee fixed by the bye-laws for the obtaining of such license."

The number of dentists practicing in the province of Quebec only amount to sixty.—*Dr. Geo. Cunningham in a letter to London Dental Record.*

I need not point out to you the great difficulties to be overcome by the patient, even after all that is possible has been done. A patient with a congenital cleft of the palate has never been able to pronounce distinctly any words, and but few sounds. Therefore, after the introduction of such an instrument, it requires an actual course of training to teach them to pronounce sounds they have never learned to do before, and this patient is no exception to the rule. There is, however, a marked improvement in her capacity to utter sounds, and even already she has learned to repeat sounds she could not imitate at all before. She had only worn the plate and artificial velum a fortnight, and it took the best part of that time to familiarize her with it.—*London Dental Record.*

Editorial, Etc.

THE REQUISITE CONDITIONS FOR PRACTICING DENTISTRY IN THE PROVINCE OF QUEBEC.—Before entering upon the study of dentistry in the province of Quebec, every person must, previous to signing indentures with a licentiate, present to the Secretary of the Board a certificate of having satisfactorily passed the matriculation examination prescribed by law. The Canadian practitioners are naturally proud of the matriculation examination which is required before the period of studentship can count, and which is very similar to our own, both as regards obligatory and optional objects. The period of studentship comprises four years of actual service in the office of a licentiate, and the attendance after the second year upon at least one full course of lectures in a recognized dental or medical college upon the following subjects:—Anatomy (theoretical and practical), Physiology and Chemistry. In practical anatomy, the student must give proof of having dissected at least one head and neck. Certified tickets of regular attendance upon each subject are positively required, If a student desires to attend a Dental College, the actual time of such attendance is accepted as an equivalent to the same period of studentship. Students in their third and fourth years are supplied with a brief synopsis of studies, comprising an outline of the special subjects of examination.

After the usual requirements as to age, matriculation and studentship, the candidate is required to lodge with the treasurer a fee of sixty dollars, forty of which are refunded him in case of failure. A preliminary practical examination takes place, in which the student is required to perform operations in the mouth, and to give practical evidence of his skill as a mechanical dentist. The examination is written, oral and clinical, and divided as follows:—

1. Dental Anatomy and Physiology (Head and Neck).
2. Chemistry and Metallurgy.
3. Anæsthetics, Dental Hygiene.
4. Operative Dentistry (Theoretical and Practical).
5. Mechanical Dentistry " "
6. Dental Pathology, Therapeutics and Materia Medica.
7. Irregularties of the Teeth (Causes and Treatment).
8. Origin and Development of the Teeth.

Since 1885, every applicant has also been obliged to lodge with the secretary an original thesis upon some practical subject in dentistry, which he must defend before the board of examiners.

Since 1884, the annual assessment of two dollars has been imposed upon each licentiate, the only penalty for non-payment, however, seems to be that no licentiate in arrears is entitled to vote at the election of the Board of Examiners.

Another interesting resolution was passed in the same year, by which licentiates are not allowed to open branch offices under the charge of students or other unlicensed parties, and such students or other unlicensed parties are subject to be prosecuted if detected.

Provided the usual statutory notice of intended amendment or addition is duly made, any section of the by-laws, or any of the rules of order or regulations of the Board may be amended or additions made by a three-fifths vote of the members present.

The election of the Board of Examiners, seven in number is made by ballot every three years, at the usual general meeting. This Board also conducts the general management of

ental Surgery.

TIMORE COLLEGE OF DENTAL SURGERY.
EUTAW ST

was chartered in 1839 by an Act of the General
land, and is the oldest and most widely known
the world. The majority of the eminent prac-
stry in this country and Europe are graduates of
llege. The College Building is one of the largest
ures of the kind in country, and the collection
n the Museum c xcelled. The number of
y visiting the been so great that the
been comp itional space and chairs to
y large an Operating Hall. All such
re opera dents, under the careful super-
the P onstrators.

e A structions will commence on October
until the beginning of March follo
ssion are devoted to Lectures on p
"Filling of Teeth," and Construction
, Infirmary Practice and Demonstrations.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge**,) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular or Winter** Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

F. J. S. GORGAS, M. D., D. D. S.
Dean of the Dental Department of the University of Maryland.
845 N. EUTAW STREET, BALTIMORE, MD.

Baltimore College of Dental Surgery.

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BALTIMORE COLLEGE OF DENTAL SURGERY
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This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations.

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The Oldest Dental College in the World.

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M. WHILLDIN FOSTER, M. D., D. D. S.,
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Lecturer on Dental Mechanism and Metallurgy.

B. HOLLY SMITH, M. D., D. D. S.
Lecturer on Special Anatomy and Dental Materia Medica.

THOMAS S. LATIMER, M. D., Professor of Physiology.
JAMES E. LINDSAY, M. D., Professor of Chemistry.
CHARLES F. BEVAN, M. D., Professor of Anatomy.
OSCAR J. COSKERY, M. D., Clinical Professor of Oral Surgery.
RICHARD GUNDRY, M. D., Professor of Materia Medica.

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E. Parmly Brown, D. D. S.......N. Y.
A. L. Northrop, D. D. S........N. Y.
Chas. R. Butler, D. D. S...... Ohio
E. L. Hunter, D. D. S.......... N. C.
W. W. Walker, D. D. S.........N. Y.
T. S. Waters, D. D. S............Md.
David Genese, D. D. S...........Md.
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R. B. Winder, Jr., Phar. G., D. D. S., Demonstrator of Operative Dentistry.
W. G. Foster, D. D. S., Demonstrator of Mechanical Dentistry.

Assistant Demonstrators.

George G. Hardy, D. D. S
J. W. Smith, D. D. S.
J. E. Orrison, D. D. S.
W. W. Dumbracco, D. D. S.
G. Marshall Smith, D.D.S.
C. S. Seibold, D. D. S.
J. W. Chambers, M. D., Demonstrator of Anatomy.
J. H. Branham, M. D., Assistant Demonstrator of Anatomy.

The Forty-Ninth Annual Session will commence on the 1st of October, 1888, and continue until March, 1889. The Infirmary is open during the entire year for Dental operations.

Students corresponding with the Dean will please be careful to give full address, and direct their letters to

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Beginning at Vienna, in 1873, where I made my first display I have received successively at the Six World's Fairs th ***Highest Award for ARTIFICIAL TEETH;*** *this being the mos important branch of my business and all that I exhibited.*

The greatest proof ever extended for Superiority to any manufacturer of ***PORCELAIN TEETH,*** *for their Strength, Adaptatio and Natural Life-like Appearance, was received by me through th Report of the Judges; Centennial International Exhibition 1876.*

EXTRACT

FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XXIV.

"H. D. Justi EXHIBITED NOTHING BUT TEETH, but his display wa beautiful in the extreme. In color, translucency and texture, they were a that could be desired; they were a faithful reproduction of the physiologica characteristics of the natural organs, both to the individual teeth and relativel to the entire set. Their conformation with reference to close and easy adaptation to the maxillary arch showed careful study of the needs of both patie and operator. Their various and numerous deviations from uniformity of a and outline, simulating the irregularities of nature, was so perfect that wh in the mouth no suspicion of their artificial nature would be entertained. Th disposition of tooth-material was so skillfully managed as to secure the greate amount of strength with the least bulk; and the insertion of platinum pi was so arranged as to render their displacement an almost impossible accident.

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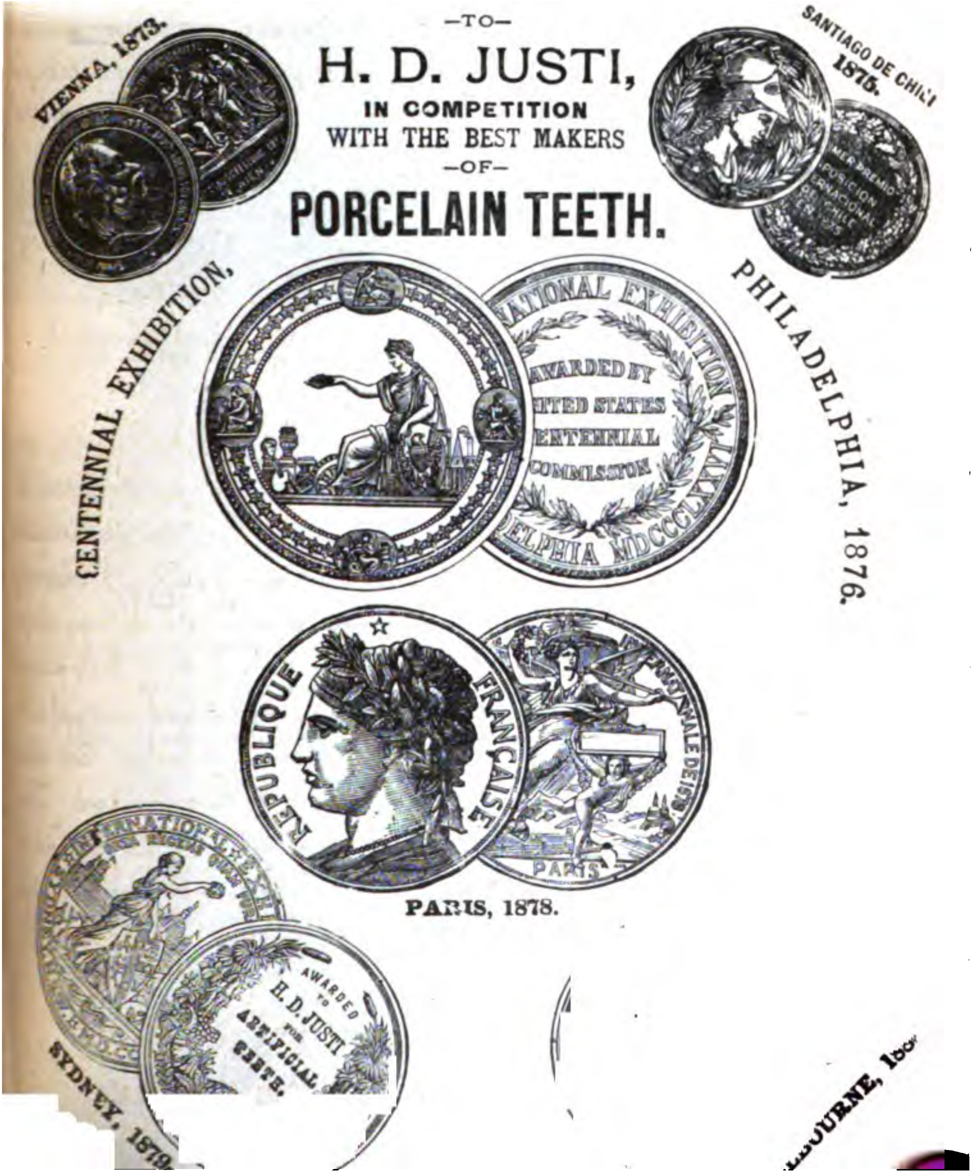
—TO—

H. D. JUSTI,

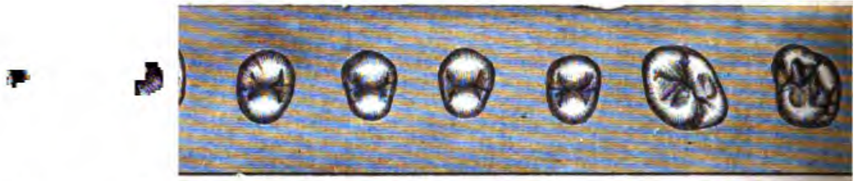
IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.



Solid Gold Cusps for Crown and Bridge-Work.

RIGHT. UPPER. LEFT.



1	2	3	4	5	6	7	8
$3.50	$3.50	$2.50	$2.00	$2.00	$2.00	$3.50	$3 50

THICKNESS OF THE GOLD CUSPS.

16	15	14	13	12	11	10	6
$3.00	$3.50	$2.00	$2.00	$2.00	$2.00	$3.50	$3.00

LEFT. LOWER. RIGHT.

These solid Cusps are made of 22-carat gold, and are designed to be soldered to seamless or other gold bands fitted to the natural tooth-roots in the mouth. The cusps are also intended to form the masticating surfaces of porcelain crowns in bridge-work.

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DENTAL METALLURGY,

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SECOND EDITION. REVISED AND ENLARGED.

The new edition of this popular work is now ready for delivery. The volume has been revised carefully and brought down to the latest developments in the department of which it treats.

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A NEW ANESTHETIC MANUAL.

NITROUS OXIDE:

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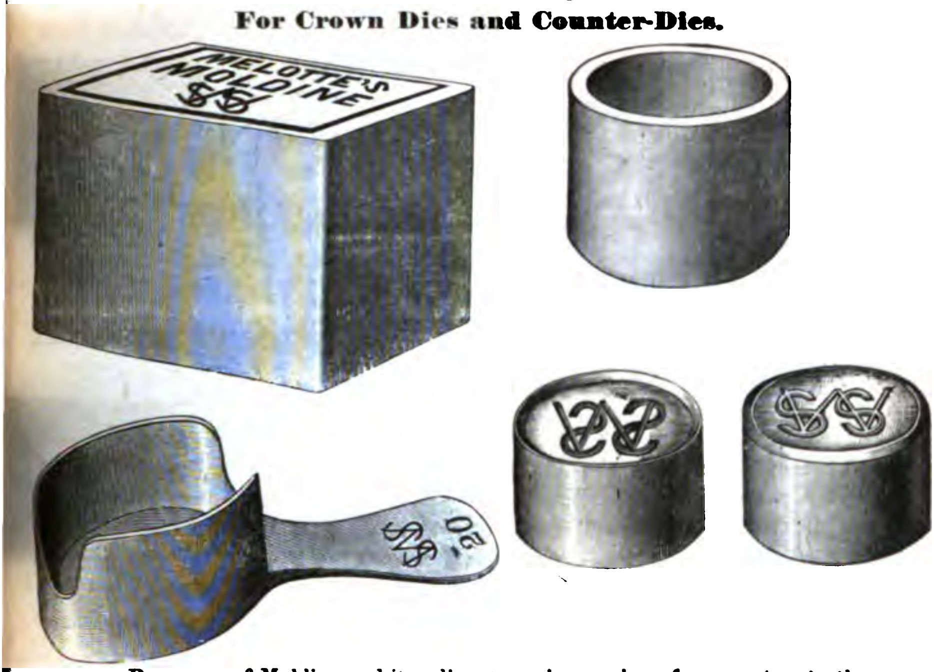
THE S. S. WHITE DENTAL MFG. CO.

PHILADELPHIA NEW YORK BOSTON CHICAGO BROOKLYN.

DR. MELOTTE'S
Moldine, Impression Cup, Ring, & Fusible Metal,
For Crown Dies and Counter-Dies.



By means of Moldine and its adjuncts an impression of one or two teeth or roots may be taken and a die and counter-die made in less than five minutes. Gold caps or regulating fixtures may be accurately fitted by means of the dies thus quickly formed. Dr. Melotte and other dentists have found these devices to simplify and expedite crown and bridge-work. Moldine is also an immediate investient for work to be soldered; solder will not flow over the inside of a collar filled with Moldine, or over the inside of its cap. Metal work may be thus made or repaired without waiting a momemt for the Moldine investient to dry or set. If Moldine stiffens by use, knead in a little glycerine.

Printed instructions accompany each package.

In ordering Moldine to be sent by mail please add the postage (20 cents for the complete apparatus; 10 cents for the material alone) to the remittance.

PRICES.

Complete Outfit, inclosed in a tin box containing one half pound Moldine, one Cup, one Ring, and two ingots of Fusible Metal,		$1.50
Melotte's Moldine.	per half pound	.50
Impression Cup (S. S. W. No. 20)	each	.30
Rubber Ring	"	.05
Fusible Metal, per ingot (about 2¼ ounces)	"	.38

BRITANNIA IMPRESSION TRAYS.
ADVANCE IN PRICES.

Owing to the advance in the price of tin we are compelled to make the following changes in prices of Impression Trays:

Uppers,	No. 1 to 8 and 10 to 16	each	$0.30
"	" 9	"	.25
"	" 17 and 18	"	.40
Lowers,	" 1 to 16	"	.30
"	" 17 and 18	"	.40
Crown Work Tray No. 20		"	.30

The Wardle and Franklin Trays will not be raised unless a further advance should be made in tin.

THE S. S. WHITE DENTAL MFG. CO.,
Philadelphia, New York. Boston, [illegible] Brooklyn

WILLIAM VALLEAU, JR.

MANUFACTURER OF

SOFT AND COHESIVE

GOLD FOIL,

EUREKA GOLD FILLING,

Extra Dry (Gold & Platina) Alloy, Improved Amalgam, &c.

506 BROOME STREET, - - - N. Y. CITY.

We beg leave to call the attention of the Dental profession to the fact that our business was established in 1849, and has been strictly confined to purifying and hammering metals. With this experience we feel justified in asserting that any article we put upon the market should certainly have the merit which we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made *cheap*.

Our Extra Dry Alloy and Improved Amalgam are composed of entirely pure metals, fused and mixed with the greatest care consistent with a view to produce the general effect to be desired in all Amalgams. They contain no *Cadmium* or *Zinc*.

We will cheerfully extend every facility to anyone desiring to test them to their fullest capacity, and most respectfully invite a trial.

These fillings can be obtained at any first-class Dental depot, or directly from our house at the following rates:

Soft and Cohesive Foil	$30 00	per oz.
" " " "	15 00	" ½ "
" " " "	7 50	" ¼ "
" " " "	4 00	" ⅛ "

Eureka Gold Filling at same rates

Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

All goods can be returned if not as represented.

FOR SALE BY SNOWDEN & COWMAN

CAULK'S FILLING MATERIALS.

ESTABLISHED 1877.

CAULK'S TRADE DIAMOND MARK CEMENT

CAULK'S DIAMOND CEMENT
For Filling Teeth,
Mounting Artificial Crowns.
Excellent for Lining Cavities
and other Dental Purposes.
GRAY.
YELLOW.
LIQUID.
MEDIUM.
LIGHT

FOUR COLORS and LIQUID.—Gray, Yellow, Medium and Light, - $2.00 per Package.
TWO " " " —Gray and Yellow, - - - - - - - 1.50 " "
ONE " " " —Gray, Yellow, Medium, Light or Gum, - 1.00 " "

This Compound Stands Without a Rival.

USED FOR TEN YEARS BY LEADING DENTISTS THROUGHOUT THE WORLD.

DIAMOND CEMENT Should not be classed with the so-called oxy-phosphates, as is often the case—the materials of which it is composed and its process of manufacture being entirely different—hence its Superiority.

IT HARDENS IN WATER OR SALIVA. Two or more colors blended together (in mixing) will produce any shade desired.

CAULK'S PAR-EXCELLENCE ALLOY.

This Gold and Platina Alloy is manufactured on a new principle. Saves teeth where others fail. It is the result of a long series of experiments, and has been in constant use for TEN years. By our NEW METHOD of manufacture there is no GUESS WORK. The molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

Price, in ⅓, ½ and 1 ounce packages, per ounce, $3 00; two ounces, $5.00.

CAULK'S WHITE ALLOY

has been greatly improved. There is nothing equal or superior to it. Is of a peculiar grayish white color. When properly manipulated with our Purified Mercury it will retain its color under all circumstances.

Price, in ¼, ½ and 1 ounce packages, per ounce, $4.00; two ounces, $7.00.

Caulk's Diamond Point Stopping and Gutta-Percha Points for Filling Roots.

This form of Gutta-Percha having been in the market for several years, has stood the greatest test of all—that of time. The Stopping is put up in sealed envelopes, and the Pellets, Cylinders and Points in sealed boxes, bearing a fac simile of our signature.

Price, in ⅛, ¼, ½ and 1 ounce packages, per ounce (reduced to) $2.00.

All of Caulk's Filling Materials are sold by Troy Weight and sent by mail.

Over 15,000 Dentists are using these Materials throughout the World. What bettdr evidence do you wish of their Superiority and Excellence ?

Orders for Dental Supplies will receive prompt attention.

L. D. CAULK, Manufacturer, CAMDEN, DELAWARE.

CHARLES ABBEY & SONS,

MANUFACTURERS OF

DENTISTS' FINE GOLD AND TIN FOIL.

The attention of Dentists is invited to our FINE GOLD FOIL which is prepared under our constant personal supervision. Our Nos. are 4. 5. 6. and 8

We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5. and 6.

ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, prepared expressly for the purpose, with great care, by ourselves.

ADDRESS— **CHARLES ABBEY & SONS, Philadelphia**

LUKENS & WHITTINGTON,

ESTABLISHED 1866.

MANUFACTURERS OF

DENTAL INSTRUMENTS

And Dealers in Dental Supplies,

WHOLESALE & RETAIL,

626 RACE STREET,

PHILADELPHIA, PA.

WE desire to mail a copy of our new circular and prospectus to every reader of the AMERICAN JOURNAL OF DENTAL SCIENCE. If you have not already received a copy, send us your name and address plainly written on a postal card. Address

BEECHER & CO.,

42 THIRD AVENUE. NEW YORK.

DR. GENESE'S

Separating Steam Cured Rubber Strips,

—FREE FROM ODOR,—

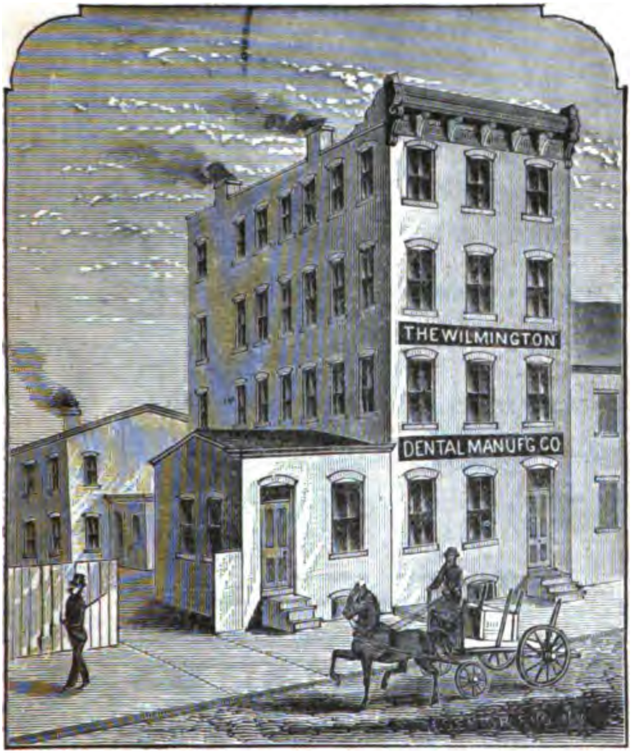
Made from Pure Para Rubber,

FOR SALE AT ALL DENTAL DEPOTS.

The Wilmington Dental Manufac'ng Co.

MANUFACTURERS OF SUPERIOR

ARTIFICIAL TEETH.



Nos. 1010 AND 1012 KING STREET,

WILMINGTON, DELAWARE.

Having been fully recognized as producing a ***Superior Tooth*** at a very moderate ***price,*** now further avail themselves of this medium through which to call the attention of the Dental Profession to their manufacture. They have now brought the character of their ***moulds*** to a legitimate form in design and construction, and the ***shades*** of their teeth to that variety which affords the Dentist the opportunity of approaching the ***natural enamel.*** A very critical examination is solicited as to price and quality. Send for price-list.

For Sale by Dental Dealers Everywhere.

PURE GOLD FOIL,

MANUFACTURED BY

J. M. NEY & CO.,

HARTFORD. CONN.

SOFT, TOUGH AND MALLEABLE

CAN BE MADE AS ADHESIVE AS DESIRED BY RE-ANNEALING.

Receives our personal attention in refining.

FOR SALE BY - SNOWDEN & COWMAN, BALTIMORE, MD.

AND DENTAL DEPOTS GENERALLY.

Jacob J. Teufel & Bro.

—DENTAL—

FORCEPS

A SPECIALTY.

MEDAL AND DIPLOMA AWARDED BY THE

Centennial Commission, 1876.

114 South Tenth Street,

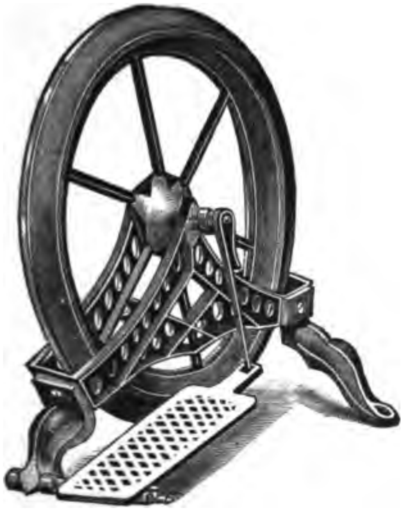
PHILADELPHIA.

All Our Forceps are Warranted.

FOR SALE BY SNOWDEN & COWMAN

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

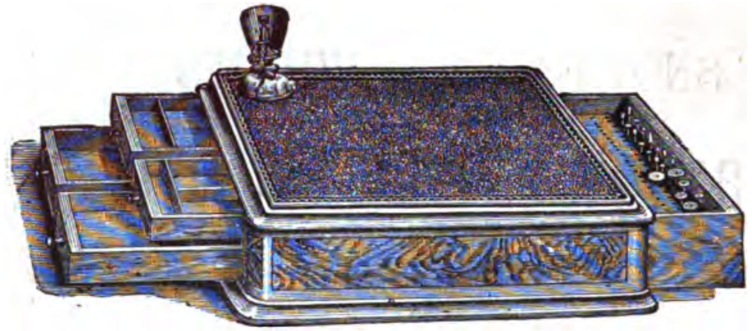
Price Boxed, - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

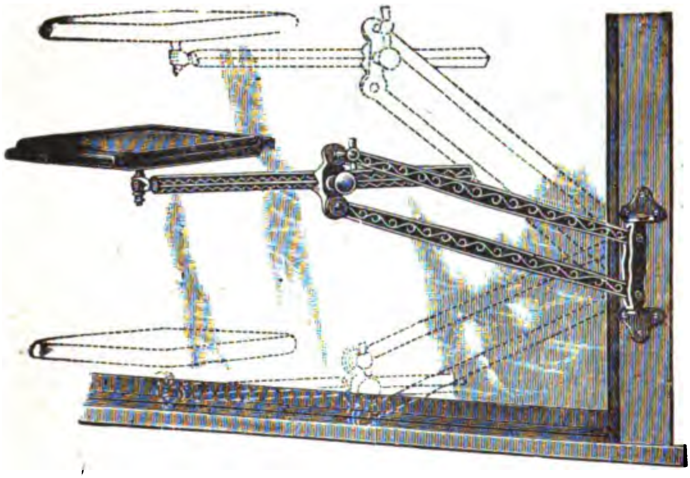
ALLAN TABLE.



VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

STUDENT BRACKET.

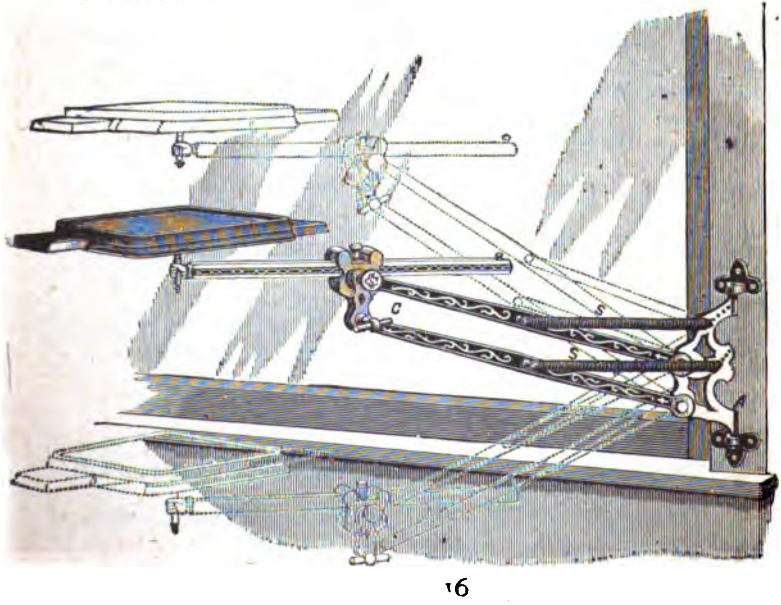


This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel lated. Bar Slides between four rollers. C, the Clamp, can be reglated for any load. The Allan Table works fine on this Bracket.

PRICE WITH SMALL TABLE, - - - - - $22.50.

Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

Western and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

Careful Attention Given to the Smallest Order.

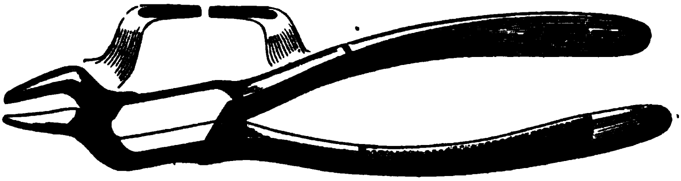
—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

17 Subscription Fifty Cents.

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen,	$2.00

ARTICULATORS

From	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials,	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound,	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound,	1,25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ouuce,	$4.00

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce,	$4.90

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce,	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce,	$4.00

Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN,

MANUFACTURERS OF

Dental Chairs, Lathes, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,	$32.00	$16.00	$8.00	$4.00
Valleau's	30.00	15.00	7.50	4.00
Ney & Co's.	30.00	15.00	7.50	4.00
S. S. White's, ½ Century,	30.00	15.00	7.50	4.00
" " Globe,	30.00	15.00	7.50	4.00
" " 1000 Fine,	30.00	15.00	7.50	4.00
R. S. Williams, Cylinders, A,	30.00	15.00	8.00	4.00
" " " B,				
" " Rect. Pellets,				
" " Standard,				
Watt's Crystal,	32.00	16.00	8.00	4.00
E. Rowan & Co.	29.00	15.00	3.20 per 1-10 oz.	
" " untrimmed,			5.60 per 1-5 oz.	
" " "			2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - - -	40 Cents per Book.
S. S. White's, - - - - - - - -	30 " " "
" " Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN,
No. 9 West Fayette Street Baltimore.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE.	15 Cts.	10 Cts.
For $15 00 net Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE,	15 Cts.	10 Cts.
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per. set of 14,	$ 1 00
" 11 " "	10 00
" 29 " "	25 00
" 60 " "	50 00
" 92 " "	75 00
" 125 " "	100 00

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMORE.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
" " " 2. "	37 50
" " " 3, " (upright)	36 25
" " " 4, " "	37 75
" " " 5, " "	31 25
" " " 6, " "	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright " Leather Covered, " " "	10 00
" " Japanned, " " "	5 00
Gas Bag, 4½ gallons of capacity	2 25
" " 7 " "	3 50
Stand for 100 gallon Cylinder	4 50
" " 500 " "	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
" " 500 " "	35 00
Refilling 100 gallon Cylinder	2 50
" 500 " " 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	26	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 50	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 " " " "	3 75
20 " " " "	7 00
Pound	35

Boxing extra.

DENTAL PLASTER.

Barrel	$ 3 50
Half-Barrel	2 50
Quarter-Barrel	1 60
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

AMALGAMS.

Townsend's	$2.00	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	3.00	" "
Standard Dental Alloy,	6.00	" "
Lawrence's	3.00	" "
Arrington's	2.50	" "
King's,	3.00	" "
Sterling Amalgam,	3.00	" "
Chase's Alcohol-Tight,	3.00	" "
Olivers Amalgam,	3.00	" "
" White Amalgam,	5.00	" "

CEMENTS.

Roman Cement, best in the market,		$1 00
Agate Cement, in 1 oz. Boxes,		2.00
" " " ½ "		1.50
Weston's Insoluble Cement, ½ oz.,		1.50
Dr. Flagg's Plastic Enamel,	per Pk'g,	2.00
Fossiline,	" "	2.00
Metcalf's Cement,	" "	2.00
H. D. Justis's Insoluble Cement,		
1 oz. Package, 1, 2, 3, 4 Colors,		3.00
½ " " any above "		1.50
H D. Justis's Acme Cement,		
One oz. Package,		3.00
Half " "		1.50
Dr. T. B. Welch, & Son, Art. Dentine,	per Pk'ge	1.50
" C. N. Pierce Phos. Zinc,	" "	2.00
" T. O. Oliver's Oxy Phos,	" "	2.00
" Smith's " Chloride,	" "	1.00
Houghtons's Os-Artificial,	" "	1.00
Poulson's Mineral Plombe,	" "	2.50
Dawsons's Mineral Cement	" "	1.50
Caulks's Diamond "		
Per Package, 2 Colors,		1.50
" " 1 "		1 00
Caulk's Hydraulic Pebbles, large Pk'ge,		2.00

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	"	2.25
Holdfast Rubber,	"	3.00
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Star Rubber,	"	3.50
Sam'l S. White's Bow Spring,	"	2.75
Whalebone Rubber,	"	3.00
Sterling Rubber,	"	3.00
Black Rubber	"	2.50

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$ 2 50
Sam'l S. White's	"	2.50

SNOWDEN & COWMAN.
9 West Fayette Street Baltimore

GOLD PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE **Gold and Platina Alloy** Will neither Shrink nor Corrode.

THE **Gold and Platina Alloy** Gives the Best Satisfaction.

TO INSURE GOOD
RESULTS USE THE
BEST MATERIAL.

THE **Gold and Platina Alloy** Is universally recognized as being superior to all.

THE **Gold and Platina Alloy** Makes the next best Filling to Gold.

Put up in ¼, ½ and
1 oz. p'k'gs. Each
package warranted
as represented.

THE **Gold and Platina Alloy** Is free from Dirt or Dust.

THE **Gold and Platina Alloy** Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED

—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

FOUNDED 1869.

GIDEON SIBLEY,

TRADE MARK.

Manufacturer of

Manufacturer and Dealer in

Artificial Teeth and Dentists' Materials.

THIRTEENTH AND FILBERT STS.

PHILADELPHIA, PA.

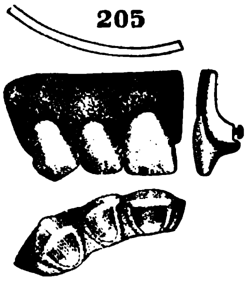
DENTISTS!

DON'T READ THIS!

unless you want to economize in time, and consequently save money. To accomplish this result you must have the best Teeth in the market, and they are

Gideon Sibley's Improved Artificial Teeth.

From this claim we except no make of Teeth, foreign or domestic, and it is daily substantiated by the unsolicited testimonials of thousands of Dentists, many of whom use these Celebrated Teeth exclusively. Sample sets, $1.00. For sale by all dealers. Sample cards and abridged price list free by mail. All orders for Teeth and Dental Supplies will receive prompt and careful attention.



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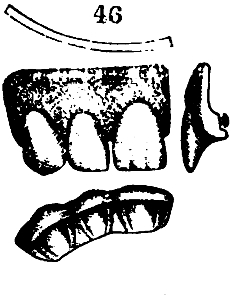

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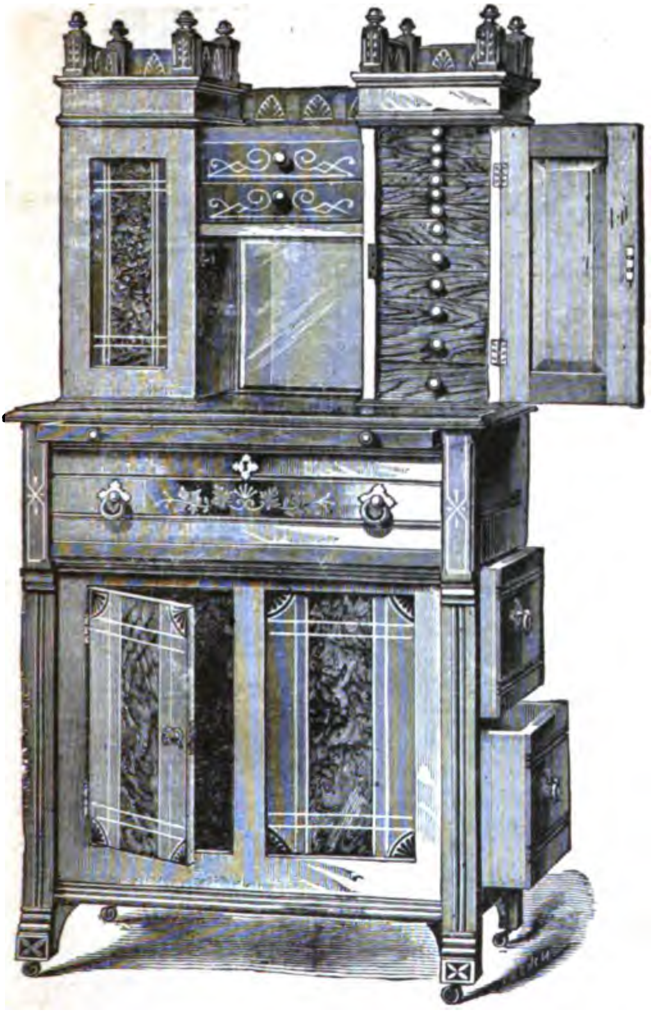
Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16½ by ½ inches deep, lined with felt-cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

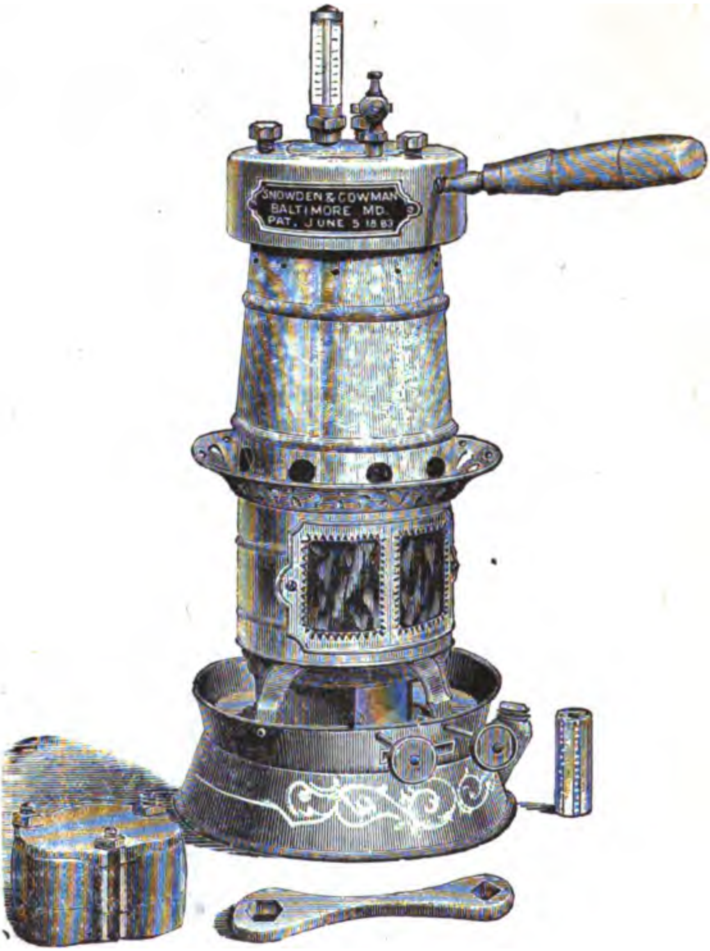
PRICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	50.00.
" " Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, TOLEDO, OHIO.

BRANCH: 29 Circle Street, INDIANAPOLIS, IND.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right; and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—Howard W. Hoopes, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—Drs. Williams and Pennington.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. Duck, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—Thomas H. Davy, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—Bernhard Myer, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. Bierbower, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—Wm. B. Finney, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

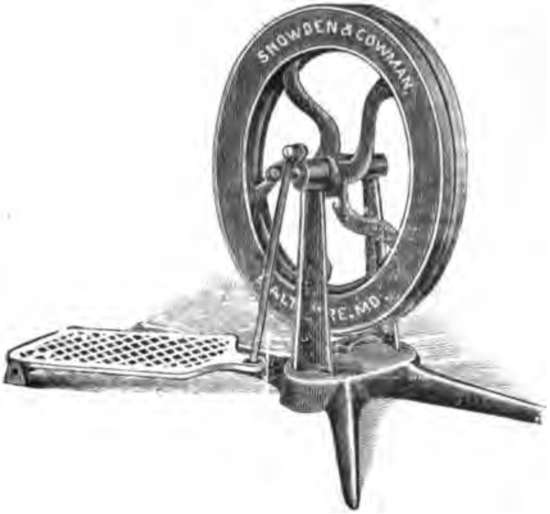
KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.
BALTIMORE, MD.

This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$8.00**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

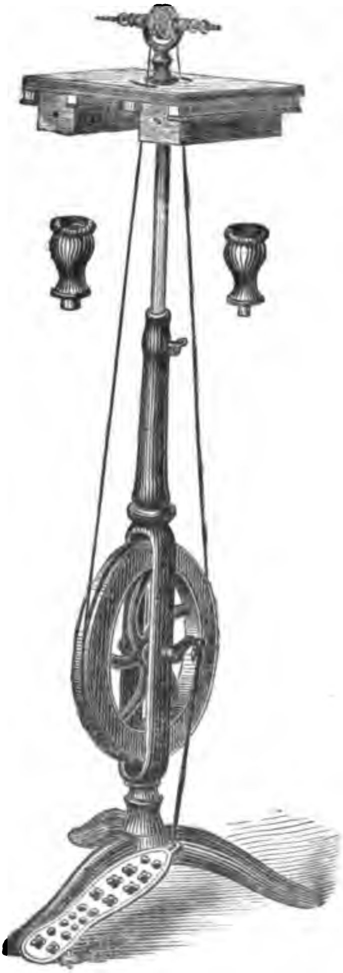
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks,	18 00
United States Lathe—Long Spindle,	16 00
" " " Short Spindle,	16 00
" " " Stand and Cord,	12 00
American Lathe,	15 00
" " Extra Large Driving-Wheel,	16 00
Diamond Lathe—Complete,	14 00
" " Fly Wheel,	8 00
Fly Wheel, No. 1, (New)	8 00
Portable Hand or Foot Lathe—Complete,	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamond Lathe Head—Polished Brass,	6 00
Socket Table Head,	5 00
U. S. Table Head—holes in base to screw to table,	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle,	75
Extension Brackets—weight only five pounds,	6 00
Portable Head-Rests—weight only four pounds,	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps,	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new,	1 50
Ingot Moulds—broad base with handles, No. 1	2 25
" " " " No. 2	2 75
" " " " No. 3	3 25
Bailey's Moulding Flasks,—per set of 2,	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 5
Britannia Impression Cups—long handles, various styles and 27 sizes—each,	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

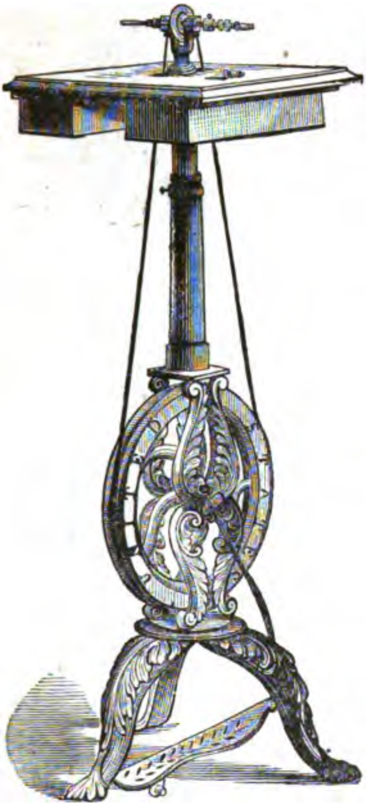
☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding teeth and polishing plates.

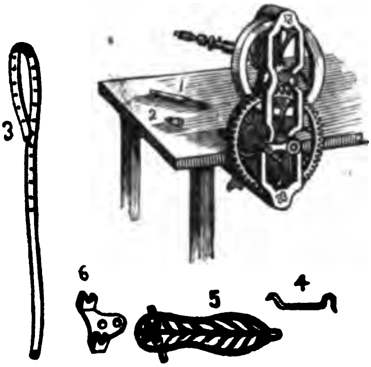
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut. - - -	$16 00
" " " " Long " - - - -	16 00
" Stand only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

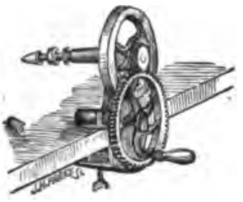
Portable Hand or Foot Lathe.



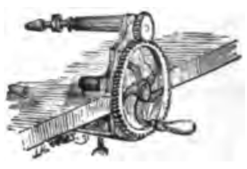
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

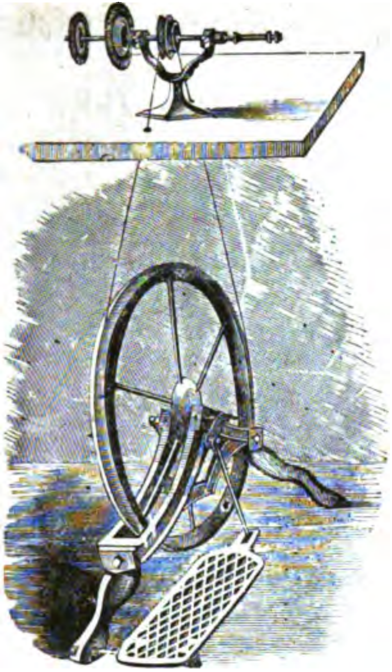
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette. Baltimore.

The Diamond Fly Wheel and Lathe Head.

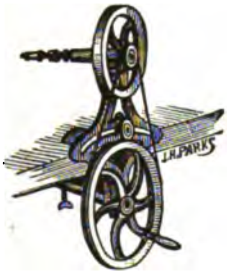


DIAMOND FLY WHEEL.

This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.
PRICE..$8 00

DIAMOND FLY WHEEL AND HEAD.
Complete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.

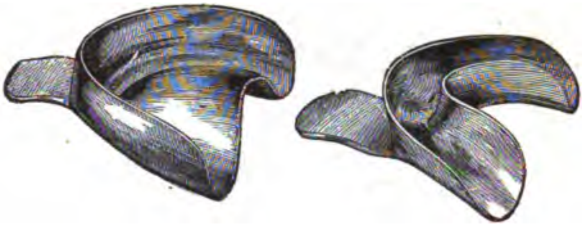


By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel with brass washers and two chucks complete. Weighs only four pounds
PRICE..$4 50

BRITANNIA IMPRESSION CUPS,

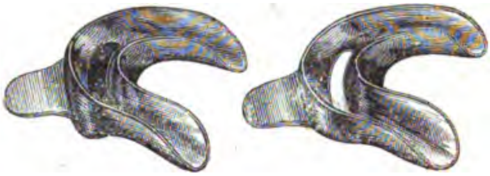
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



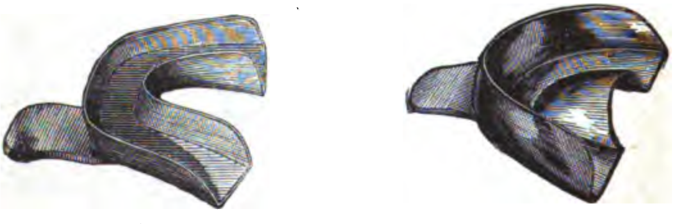
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..........................**Each**...................**25cts**

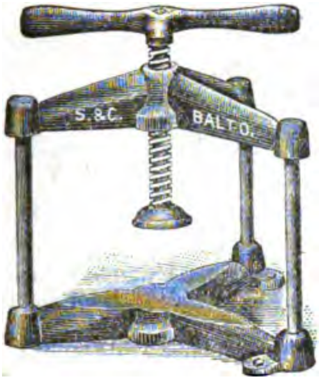
SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

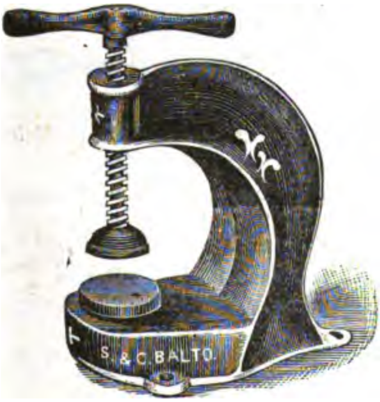
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Style.

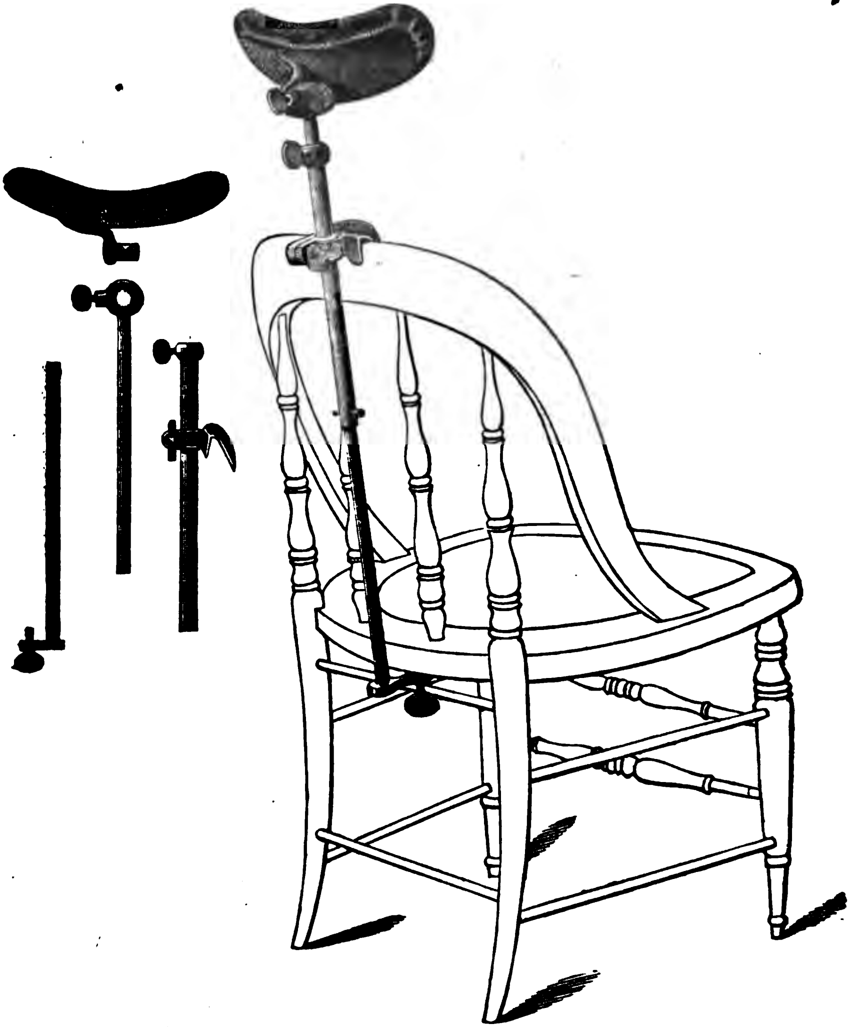


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price, - $1.50

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Rest,



This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

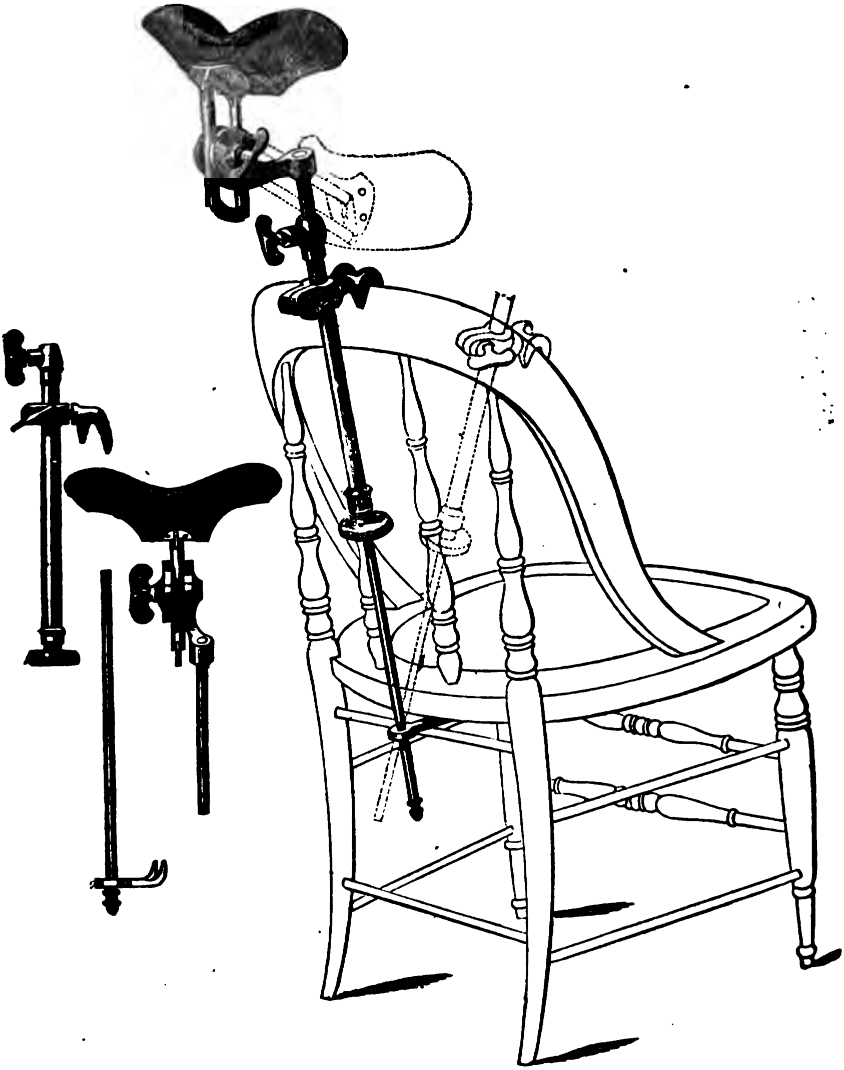
PRICE, $5 00.

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,

[PATENTED JUNE 22nd, 1886.]



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

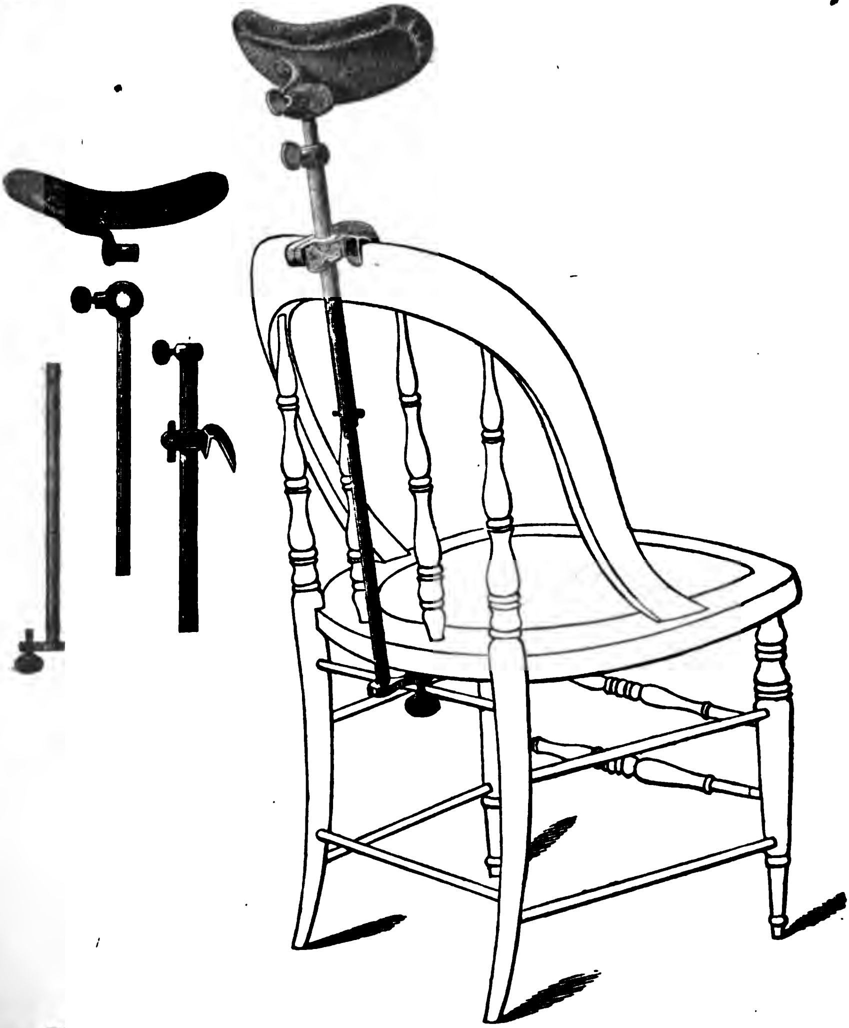
SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Rest,



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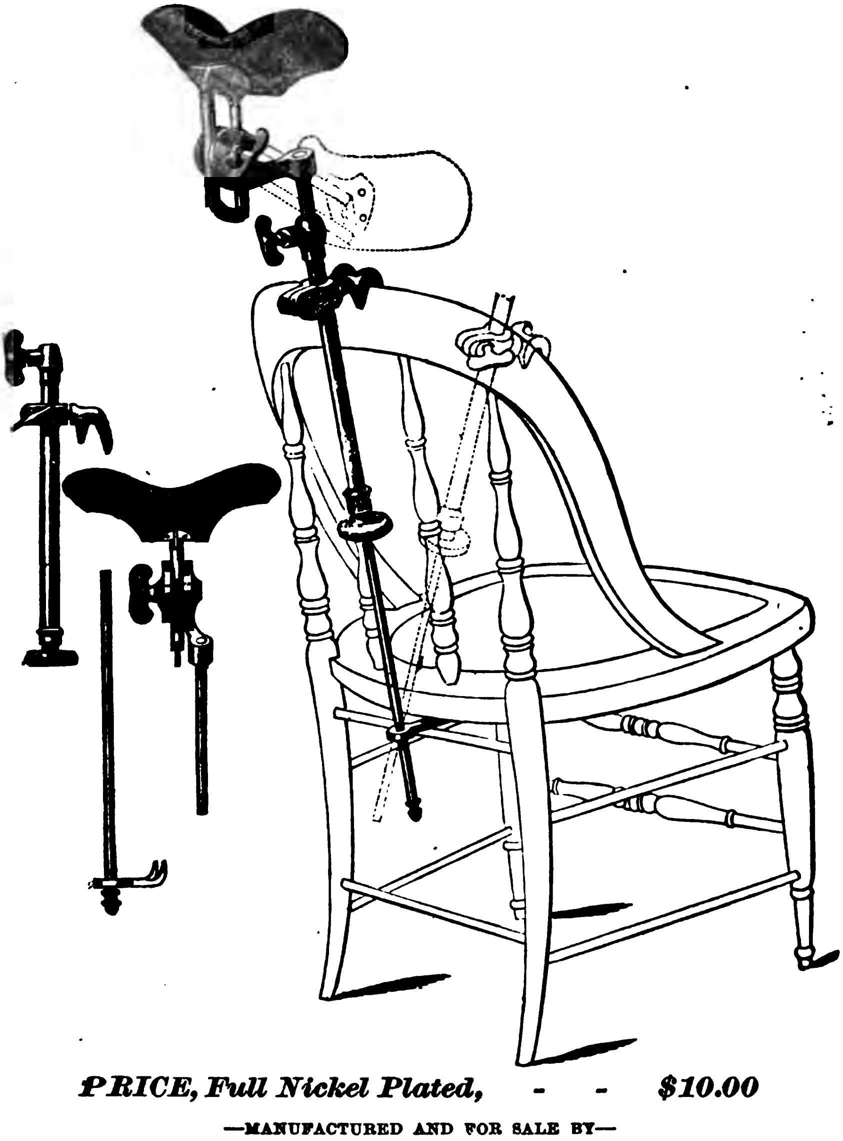


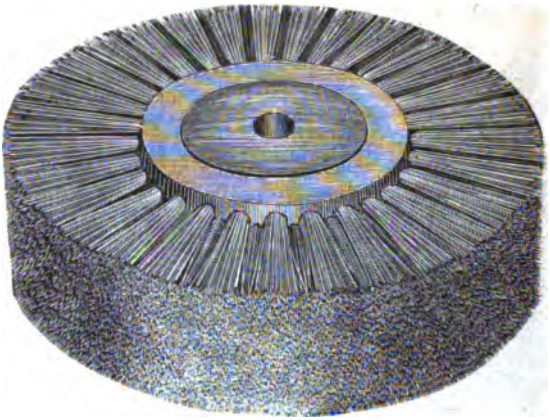
PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

NOVELTY BRUSH WHEELS.



Cut Shows No. 29.

The hubs of these wheels are made of leatheroid. They are strong and will not split nor allow the bristles to push back or become loose. They have also a decided advantage in their small size, which permits their use in polishing articles of irregular shape without risk of marring or scratching. The Novelty Wheels, while superior in quality and neatness of finish to those with the ordinary wood hubs, are only very slightly higher in price. We have the sole agency for the dental trade. The following numbers are now in stock, sizes and numbers the same as those of our wood hub wheels, In ordering state the style wanted.

STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1¾	inches	diameter,	each	$0.20
“	4	1	“	“	“	1⅞	“	“	“	.20
“	1	2	Rows	“	“	1½	“	“	“	.20
“	2	2	“	“	“	1½	“	“	“	.20
“	5	2	“	“	“	1⅝	“	“	“	.25
“	6	2	“	Medium	“	1⅝	“	“	“	.25
“	8	2	“	“	“	1¾	“	“	“	.25
“	10	2	“	Soft	“	1¾	“	“	“	.25
“	7	2	“	“	“	1¾	“	“	“	.25
“	9	2	“	“	“	1¾	“	“	“	.25
“	11	2	“	“	“	1⅞	“	“	“	.25
“	14	2	“	“	“	1⅞	“	“	“	.25
“	13	2	“	Medium	“	1⅞	“	“	“	.25
“	12	2	“	Stiff	“	1⅞	“	“	“	.25
“	19	2	“	Soft	“	2⅜	“	“	“	.30
“	22	2	“	“	“	2⅜	“	“	“	,30
“	21	2	“	Medium	“	2⅜	“	“	“	.30
“	20	2	“	Stiff	“	2⅜	“	“	“	.30
“	18	3	“	Soft	“	2	“	“	“	.35
“	17	3	“	Stiff	“	2	“	“	“	.35
“	26	3	“	Soft	“	2¾	“	“	“	.45
“	25	3	“	Stiff	“	2¾	“	“	“	.45
“	50	3	“	Soft	“	3	“	“	“	.55
“	30	4	“	“	“	3	“	“	“	.60
“	29	4	“	Stiff	“	3	“	“	“	.60

CONVERGING BRISTLES.

No.	16	3	Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.35
“	15	3	“	Stiff	“	2⅛	“	“	“	.35
“	24	3	“	Medium	“	2¾	“	“	“	.45
“	23	3	“	Stiff	“	2½	“	“	“	.45
“	28	4	“	Medium	“	3	“	“	“	.60
“	27	4	“	Stiff	“	3	“	“	“	.60

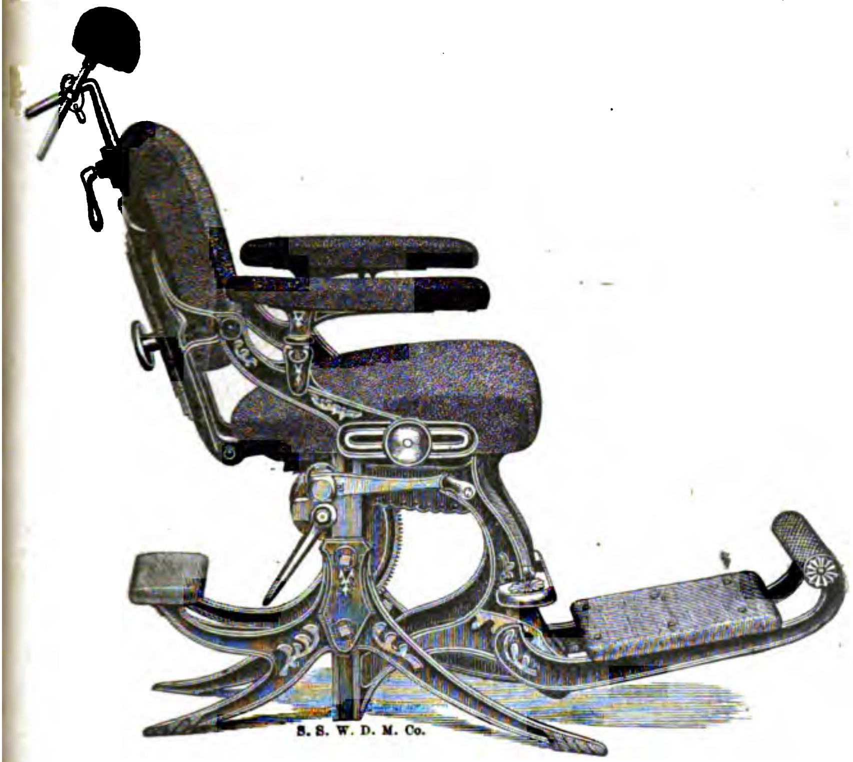
STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2	Rows	Stiff	Bristles,	1¾	inches	diameter	each	0.25
“	66	2	“	“	“	1⅞	“	“	“	.30

CUP-SHAPE BRISTLES—LONG SHANKS.

	51	2	Rows	Stiff	Bristles	1¾	inches	diameter	each	0.25
	65	2	“	“	“	1⅞	“	“		.30

THE CYCLOID CHAIR.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

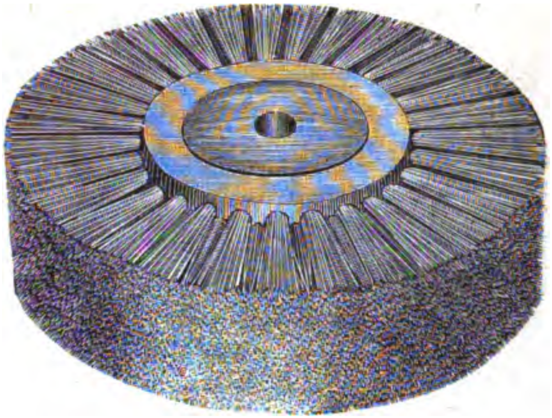
The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material,	- - -	$ 80.00
" " " Best Quality Maroon or Green Plush,		95.00

For Sale By SNOWDEN & COWMAN.

NOVELTY BRUSH WHEELS.



Cut Shows No. 29.

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STRAIGHT BRISTLES (as per cut.)

No.	3	1 Row	Stiff	Bristles,	1¾	inches diameter,	each	$0.20
"	4	1	"	"	1⅞	" "	"	.20
"	1	2 Rows	"	"	1½	" "	"	.20
"	2	2	"	"	1½	" "	"	.20
"	5	2	"	"	1⅝	" "	"	.25
"	6	2	"	Medium "	1⅝	" '	"	.25
"	8	2	"	" "	1¾	" "	"	.25
"	10	2	"	Soft "	1¾	" "	"	.25
"	7	2	"	" "	1¾	" "	"	.25
"	9	2	"	" "	1¾	" "	"	.25
"	11	2	"	" "	1⅞	" "	"	.25
"	14	2	"	" "	1⅞	" "	"	.25
"	13	2	"	Medium "	1⅞	" "	"	.25
"	12	2	"	Stiff "	1⅞	" "	"	.25
"	19	2	"	Soft "	2⅜	" "	"	.30
"	22	2	"	" "	2⅜	" "	"	,30
"	21	2	"	Medium "	2⅜	" "	"	.30
"	20	2	"	Stiff "	2⅜	" "	"	.30
"	18	3	"	Soft "	2	" "	"	.35
"	17	3	"	Stiff "	2	" "	"	.35
"	26	3	"	Soft "	2¼	" "	"	.45
"	25	3	"	Stiff "	2¼	" "	"	.45
"	50	3	"	Soft "	3	" "	"	.55
"	30	4	"	" "	3	" "	"	.60
"	29	4	"	Stiff "	3	" "	"	.60

CONVERGING BRISTLES.

No.	16	3 Rows	Medium	Bristles,	2⅛	inches diameter	each	$0.35
"	15	3	"	Stiff "	2⅛	" "	"	.35
"	24	3	"	Medium "	2¼	" "	"	.45
"	23	3	"	Stiff "	2½	" "	"	.45
"	28	4	"	Medium "	3	" "	"	.60
"	27	4	"	Stiff "	3	" "	"	.60

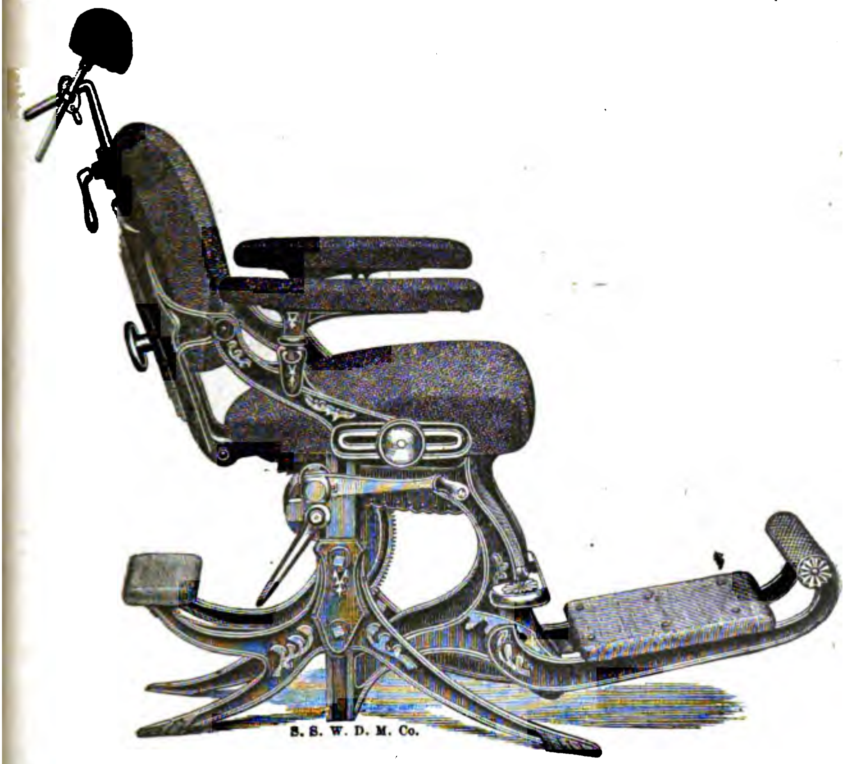
STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2 Rows	Stiff	Bristles,	1¾	inches diameter	each	0.25
"	66	2	"	" "	1⅞	" "	"	.30

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2 Rows	Stiff	Bristles	1¾	inches diameter	each	0.25
	65	2	"	" "	1⅞	" "		.30

THE CYCLOID CHAIR.



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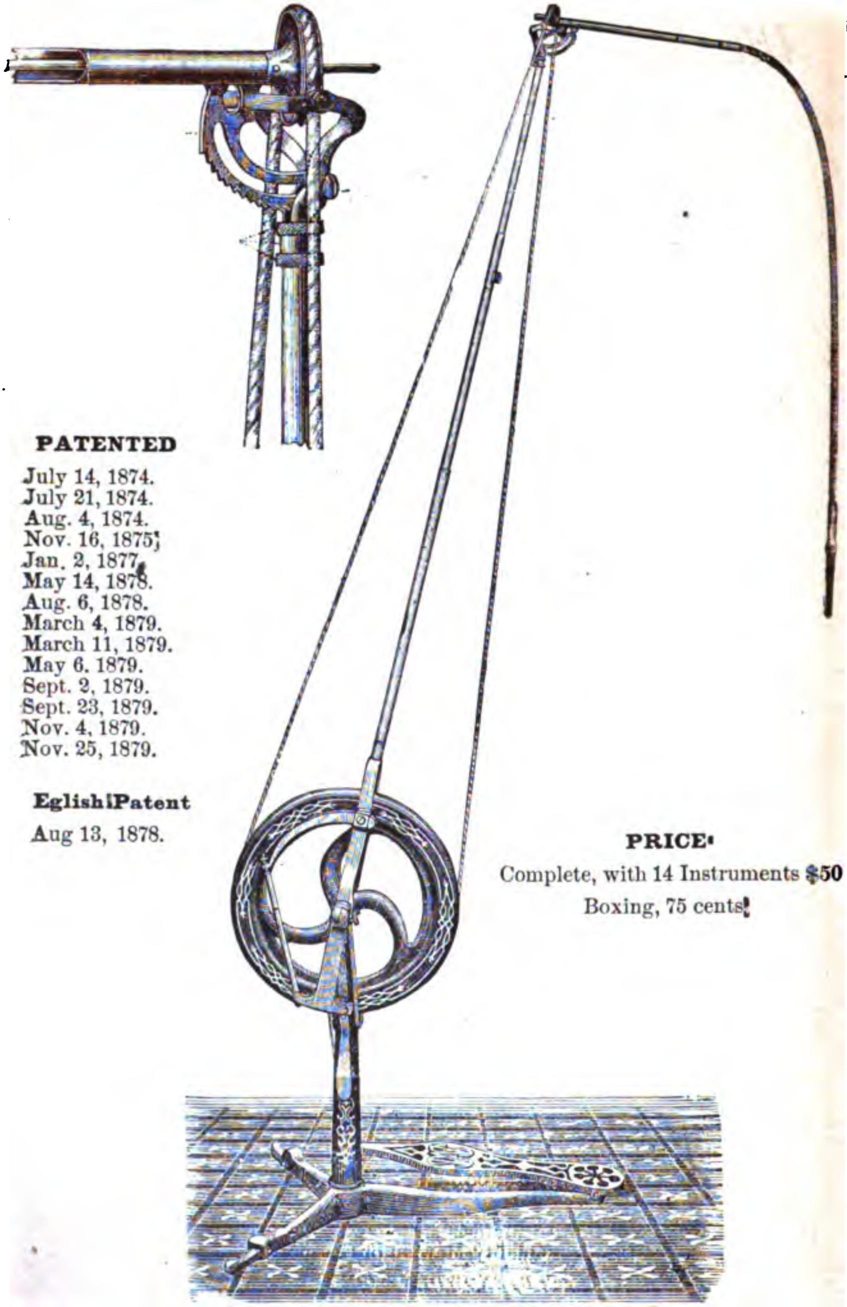
Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - - - - -	$ 80.00
" " " Best Quality Maroon or Green Plush,	9[illegible].00

For Sale By SNOWDEN & COWMAN.

THE S. S. WHITE IMPROVED DENTAL ENGINE.



PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
Jan. 2, 1877.
May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
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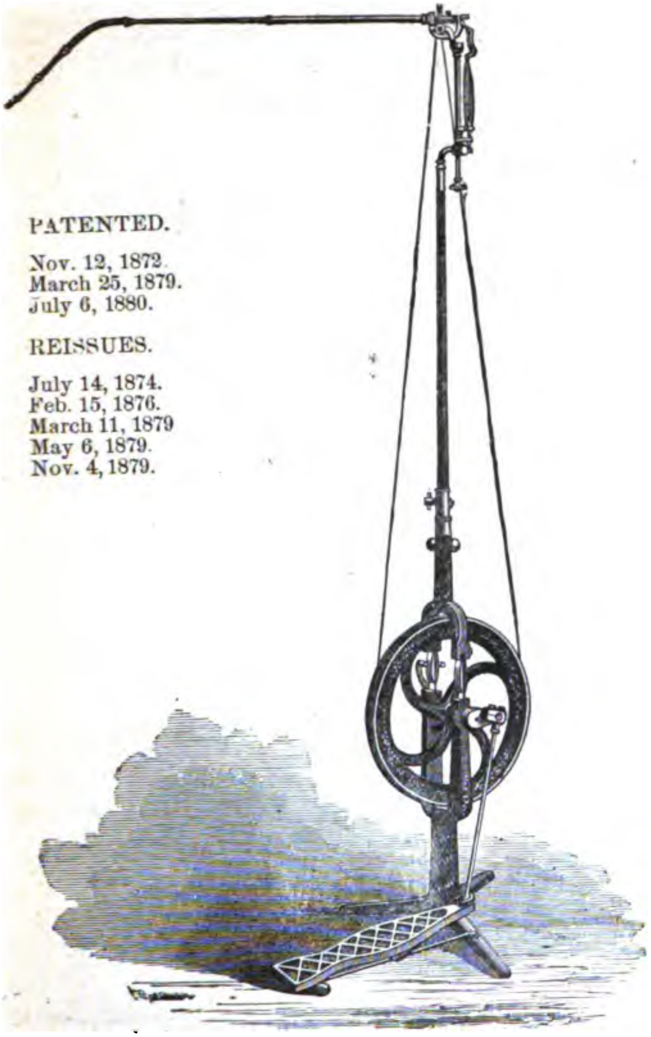

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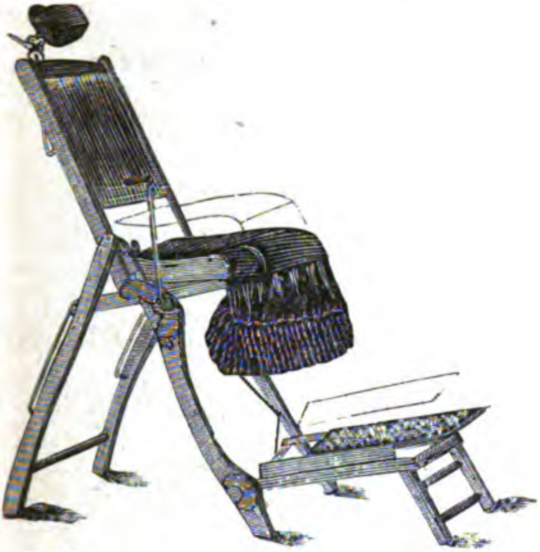

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ARTICLE I.

MOUTH MICROBES.

DANGERS OF INFECTION IN DENTAL PRACTICE.

[Read by Dr. R. L. Cochran, before the Indiana Dental Association.]

Mr. President, Ladies and Gentlemen:—I have chosen for my text, "Are the natural Teeth saved at the expense of Health and life?" I fear many times they are. Not for the want of a proper filling material nor the lack of skillful manipulation; nor is there a Dr. Sexton in it, poor deluded fellow, but my friends, the great cause is in the step taken after your patient is in the chair, and that step is want of order, method, cleanliness—and the greatest of these is cleanliness. Order, gentleman, is the first law of heaven, method is an absolute necessity for the extermination of evil, and cleanliness second only to Godliness, by which the natural teeth can be saved and our patients not suffer in health and perhaps life. My claim is made upon the ground word of the germ theory, to make a broad assertion, and I am almost persuaded to believe true, the dental chair is a positive source of contagion. In my effort to sustain this, I ask your honest, earnest consideration. That germs do exist none can rightfully deny, and that pathogenic germs work destruction to human organism none who read and reflect will doubt. That the germs is not a part of our birth is an established fact, but that we are born with organs that may become favorable soil for the home of the microbe we feel well assured. That the seed of suffering and death are sown we think has been proven beyond a question, and if sown it is our duty as physicians to look well into the whys and wherefores. Why do the germs exist and wherefore shall we look for power to battle against them? Why the pathogenic germs exist I cannot tell; as to the battle man must be the ruler and the microbe must submit. The microscope, the grandest of all known instruments, has given us the knowledge of the organism, and man's intelligence is fast finding the road to their destruction. We may not be able to destroy all pathogenic germs in the world, but we will in time find as sure a specific as has been found for Anthrax and several other diseases of germ origin. The pathogenic germ is man's enemy. The benign germ, his friend. Bacteria are necessary, in fact our farmers would have a waste desert without them. Thousands and millions of bacteria occupy different parts of our bodies and undoubtedly for good. Even the eye is a home for them, and digestion is certainly dependent upon the family of benign germs.

So much for our friends; now for our foes. There is no part of science more interesting or of so great importance to-day, as the study of pathogenic germs. So full of positive concern to all mankind, it is strange indeed that progress has been so slow in this department of science, on which health and life depend. In 1679 a German first saw bacteria and now, after more than two hundred years we are beginning to see the cause of contagion and how easy it is to transmit a pathogenic germ that may mean suffering and even death. It is through the work of germs that milk, fruit and vegetables sour,—butter spoils, and flesh and water become tainted. This is not all, for living plant, and, in fact, all there is of life, is at the mercy of the bacteria family. If bacteria exist in the bodily excretions, the armpits and unwashed feet, what must be the condition of an uncleanly mouth, or the mouth of the germ stricken individual? Simply a bacteria hot house. The fluids of the mouth in composition and temperature are favorable as a culter medium, that is, they contain the elements and at the temperature to encourage their existence. Decayed teeth, foul breath, and bad stomach are the small evils, while lowered vitality and death the final result. I say death because it is not only the benign germ that is found in the mouth, but the genuine pathogenic germ. Is it unreasonable to claim that here may be found the bacillus tuberculosis, the germ of syphilis and undoubtedly many we know not of? When we think that fifty millions may occupy a apace not larger than the period used in printed matter, is it any wonder these small but mighty beggars go unnoticed until they have become an army in numbers, for you know they have a wonderful power of increase? It is stated on good authority that started with one in a favorable medium, it may divide into two in an hour, four in two hours, eight in three hours, and in twenty-four hours will amount to millions. You can from this have some idea of their power of multiplication. They seem to have the live-forever quality and never grow old nor pass into second childhood. Bacteria as a rule are colorless, in fact so they have every advantage over us. We are in the dark until that heaven sunlight the microscope comes to our aid. To be seen with satisfaction they require an amplification of 1,000 diameters; an ordinary man magnified with such power, if standing, his head would be a mile above the ground he stood on. It has been stated the man is safe who serves the best God he knows of, so perhaps the dentist and general practitioner are excused for the destruction they have sown, from the fact that the microbe in size and color was beyond the reach of his unaided sight. But, gentlemen, no excuse can be offered now pathogenic germs exist. All can see them who will take the pains, and careful work will demonstrate their power to multiply and destroy. While it is best to be conservative in all things, yet we must not stand still when health and life are in jeopardy. Microscopist do not claim bacteria as the cause of all disease, yet through the labors of a few devoted to the greatest of all instruments, we are constantly being shown disease after disease of parasitic origin, till we are almost ready to believe this family of dwarfs are at the bottom of all sin, sickness and death, and not Mrs. Eddy's idea of error: nor do we need blinded faith or the supernatural to arrive at an intelligent and positive position. The pathogenic germ is not a modern invention. As far back as history carries us we find this invisible hand at work only under a different name, at one time thought to be the anger of the gods, again a visitation for unfaithfulness, while in truth it was the same enemy of man, pathogenic germs. Had the men of those frightful periods been microscopists instead of being blinded by superstition, thousands of lives could have been saved. But we need not go back into history; the ignorant and weak of to-day look upon these visitations as the "hand-writing on the wall;" the greater the death rate the louder they think the call, when instead of ascribing the calamity to the supernatural, if they would take hold upon the tangible and searchable, use intelligence and the microscope, they would find cause, effect and remedy in this world within our reach. The foes are no longer hidden.

Day by day brings to us knowledge of a new field the microbe is working. The first septic diseases scientifically traced from beginning to end was the silk worm disease in France in 1865 to 1867. Following this came Dr. Koch's discovery of bacillus, anthracis, then the Listerian method, or antiseptic surgery. In 1882 Dr. Koch gave to the world the startling news that he had traced tuberculosis to the bacterial family. That the bacillus of tuberculosis is the only cause of consumption is now an ocular demonstration and not a theory of which any one in doubt can ascertain with a good microscope and technical skill. Here, gentlemen, is the germ to which I wish to call your especial attention. I am well satisfied there are others that should engage our attention, but to the bacillus tuberculosis I wish to direct you at this time. Understand that this, one of the smallest of all living things, does not come into existence spontaneously, nor does it develop in nature outside of the living body. When we become educated as to the working of this bacillus and understand it is common to man and some domesticated animals, and that it can be transmitted from one te another, then can we hope for prevention instead of cure. None are born with tuberculosis, and what we understand as hereditary or predisposition, is that the organs may, under favorable conditions, become a fruitful soil for the bacillus tuberculosis. These living things are endowed with the peculiar quality we call life, and reproduce their kind, although they have no means of themselves to move from place to place, but are carried by the air, or in the food, or from one mouth to another. We are forced by necessity face to face with this enemy of health and peace, and it is simply a matter of their power to attack and our power of resistence, or in other words, if at birth we are endowed with organs proof against the bacillus, of course not including accident, man is most wonderfully constructed and balanced. So true is the balance that often without our knowledge it is thrown out, and who knows, when once out of balance, the invitation is not to some parasite to enter and play havoc. In my opinion, nature would soon right herself were it not for this everpresent devouring element.

Professor Burrill, in his address before the American Society of Microscopists, speaking of tuberculosis, said: "As we come to know more about the various methods by which the virus is conveyed, we shall be better able to escape its contagion." He said further, "that it had been thoroughly demonstrated that the bacillus may be conveyed through the food." That tuberculosis is infectious to those predisposed must be answered in the affirmative.

Although very much light has been thrown on the etiology of tuberculosis by Koch and others, yet there are some who claim unhygienic conditions, physical structure and heredity the only cause. This claim is certainly incorrect. The following is taken from a clinical lecture. A tuberculous man married a young woman with no previous tendency to tuberculous; the man died and the wife became phthisical. She remarried a man who likewise had no phthisical taint; they both died of phthisis. A niece of the woman contracted the disease in nursing her aunt, then married and her husband was in turn attacked by phthisis. Again, a girl returned from school in consumption; on her death her room and clothes passed to her sister, who died of the same disease. A third sister died under like circumstances. As their parents survive them, it is clear that the disease was not due to heredity.

Dr. Trudeau, in the *American Journal of the Medical Sciences*, gave the result of three experiments, which I here quote in full:

"Fifteen rabbits were used, divided into three lots. Five rabbits were inoculated with a pure culture third generation of the bacillus tuberculosis, and deprived of exercise, fresh air and light, with food reduced in quantity. Five more rabbits were placed in a hole ten feet deep, so damp that the box in which the rabbits were confined was always wet. The hole was covered with boards and earth, so they had neither light, fresh air nor exercise, and but a small potato each day. While living in a damp, unhealthy atmosphere, these five rabbits were healthy and removed from germ infection. Five more rabbits were inoculated the same as the first five, and then set free on an island where they had plenty of sunlight, good air, exercise and healthy food, the natural essentials to fight this deadly germ." We learn from these experiments that all of the first five died within four months with lungs extensively diseased. The five in the dark, damp hole, without inoculation and removed from germ infection, were living after four months, and when killed the lungs and surroundings were in a healthy condition. Of the five inoculated rabbits set free, one died within a month with lung disease. The other four entirely recovered from the inoculation, and when killed, four months after inoculation, all the organs were found in a healthy condition. You can readily see, gentlemen, from these experiments, that the bacillus tuberculosis is not developed outside of the living body, and that tuberculosis is entirely dependent upon the working of this microbe. There is no doubt but that the majority of mankind are constantly fighting a battle with the bacillus tuberculosis inoculated by food, air and the dentist, and when inoculation occurs through the agency of the dentist, a fatal result is almost certain, while the germ introduced by food absorption or breathing may not result in phthisis. Dr. Koch has proven that animals fed upon tuberculous food that resisted the attack of the bacillus, yet by direct inoculation soon died of phthisis, So with man; he may resist the germ in his food or that he breathes, but when direct inoculation by means of an instrument in the hands of a dentist it is a certain fatality.

Fortunately, the majority by their very nature and lung condition are sufficiently strong to throw off the deadly bacillus; but where there is a predisposition and direct inoculation occurs, tuberculosis is a certainty. Pathogenic germs require proper conditions of temperature, light, air, etc. Lungs must be by nature or accident a fruitful soil for the bacillus, or nature gains the victory over her unseen foe. I say conditions must be favorable. As an example: Pasteur only succeeded in inoculating chickens with bacillus anthracis after reducing their temperature by holding them in cold water. We also know that animals, as well as the higher type of creation, who live a natural out-doors life on proper food are as a rule free from phthisis. On the other hand over seven millions of our people are yearly afflicted, and possibly one-half die, of tuberculosis, a great many of whom might be saved by proper sanitary measures on the part of the people and order, method and cleanliness on the part of the physician.

We, as physicians, have undoubtedly been sowing the seed year after year. Yes, I admit that is saying a good deal, but stop and think. What is the condition of the substance in which the bacillus tuberculosis is found? A thick, ropy, tenacious mucus, and it must pass through the mouth, and its nature will cling to the mouth, not to say the rough surface of the teeth. Here it lies, the mouth offering it every advantage for its existence. It is not unreasonable to claim that in consumptive persons the substance thrown off the lungs, highly charged with the germ, may cling to and remain about the teeth, and in operating upon those teeth your instruments, mouth-mirror, fingers, in fact everything used about that mouth are very liable to carry away on them the secret foe hidden from the unaided sight. Your next patient, although free from lung complication, yet has the predisposition, or I should say the lungs in such condition as to offer the bacillus a working field; if in such condition what must we expect? Nothing short of inoculation, which in from three to six months will seal the fate of the persons who had confidence in your ability to not only care for the teeth but protect him or her from contagion while being operated upon. Yet certainly do not doubt the existence of the bacillus tuberculosis, and if it does exist you cannot question the possibility of its presence in the mouth of the consumptive. If in the mouth, you dare not deny the probability of its being on your instruments, your rubber dam, your mouth mirror, about your finger nails and everything used in that mouth. If on these articles you must acknowledge when placed in the mouth of your next patient if susceptible to the influence of this germ inoculation is almost certain to occur. This, gentlemen, seems to me to be a fact, cruel as it is, but I am happy to say that the bacillus tuberculosis never need be transmitted from one mouth to another. We are exceedingly fortunate in this particular. Various substances and methods are used to destroy them. The most certain of which is *flame heat* but as flame heat cannot be used on mouth mirror and such articles I present the following table prepared in 1882 by Jalan de La Croix. It shows the number of parts of water to one of the substance which simply permits bacteria to develop.

Alcohol, one in	30
Eucalyptus, one in	308
Carbolic Acid, one in	1002
Thymol. one in	2229
Oil of Mustard, one in . , ...	5734
Salicylic Acid, one in	7677
Bi-Chlo-Mercury, one in	8358
Sulphuric Acid, one in	16.782
Iodine, one in	20.020

So with flame heat and the substances named in this table we have the means at hand to destroy this mighty ruler, and if faithful to our trust not a score can be placed against us. I feel sure in the near future it will be greatly to the loss of the physician who neglects to use antiseptic treatment of instruments, appliances and everything used about his patient even to his hands. The value of such a course can be better appreciated after consulted the report from the Maternity hospital of New York.

I will here give you the course of protection I have been following for some time, and if there is a better or more certain method to remove my trusting patient from the danger line, I shall be pleased to know it. First my rooms are daily aired for at least thirty minutes, no matter how cold. As soon as my patient is in the chair, I wash my hands with soap and clear fresh water, and then rub about the finger nails a solution of one in five hundred Bi-

Chlo Mercury and glycerine. Never use the same water for the second washing. This insures to my patient clean hands and free from germ infection. My operating chair is absolutely clean and free from dust, beaten out every morning; never allow the same napkin on the head rest for the second person. Use the fountain spittoon if possible, if not, then wash out the spittoon with Bi-Chlo Mercury one in five hundred every night and place out of doors over night. I think the spittoon a great evil unless strictly and carefully taken care of; simply washing it out will not do. If it has been used by a tuberculous person the sputa will stick to the sides of the vessel and the next day from a little jar will rise in the shape of dust to be inhaled by your patient or yourself. So the absolute necessity of using a powerful germicide. Never allow bits of cotton, bibulous paper, spunk or the like to remain on the floor about your chair, or in the office. Have a waste basket, put everything of the kind in it and have it carried out every evening, or better put it in the stove. When you take up your mouth mirror wet a corner of a napkin with a 1000 solution of Bi-Chlo Mercury and wash the glass, handle and all. Your instruments of every discription you have ready for use out of sight in tight drawers; after using them you or your assistant should give them thorough attention and destroy every living thing on them. I use and advise a large bunsen burner and every instrument that is touched, good, bad and indifferent, must pass through at least five hundred degrees of flame heat; 212 degrees it is said will destroy the germ, but five hundred flame heat I am sure will. My instructions to my assistant is if she finds an instrument out of place, take it for granted it has been used and pass it through the flame before returning it to place.

Your chip blower and syringe should have the same treatment. Rubber dam should never be used the second time, not even for the same person and don't use the rubber band to hold the dam in place, for fear of scalp trouble;

better punch a hole in two corners and use a linen thread tied behind the head, it is perfectly clean and more comfortable to your patient. If you have material on bracket that has not been about the patient's mouth or handled by you while waiting on the person let your assistant put it away or wash your hands in the mercury solution before you touch it. Impression cups should always be passed through the flame after, or just before using. To be safe, and honest to your trusting patient, never use anything until it has been passed through the flame or treated to the mercury solution.

In conclusion let me say be over cautious rather than under cautious; no one ever suffered from a dentist being too careful and don't be afraid of the profession running away with the bugs; better run away with them, than have them run away with our patients.

I am under particular obligations to James Patterson, Esq., of Burlington, Iowa, a gentleman of culture who has given almost his exclusive time for the past ten years to the study of bacteria, and who is the proud possessor of as fine an instrument as there is in the country, with whom I hope to continue the good work until we prove beyond a doubt the claim I have made.—*Southern Dental Journal.*

ARTICLE II.

SPECIAL PATHOLOGY OF THE WISDOM TEETH.

BY WILLIAM RUSHTON.

(A Paper read before the Students' Society of the National Dental College.)

Mr. President and Gentlemen,—The subject of my paper tonight is the "Special Pathology of the Wisdom Teeth," and I hope you will bear with me while I briefly touch upon a few points which I hope will be of interest.

The question might naturally be asked, "Why have wisdom teeth a *special* pathology, differing from their fellows in the mouth?" I think that two reasons may be assigned; one, that the jaw, as a rule, when wisdom teeth trouble exists, is too contracted to contain its full complement of teeth, therefore the wisdom teeth, which come into place last, have more or less difficulty in eruption, and consequently cause more or less disturbance; the other reason is the close proximity of the wisdom teeth (especially the lower) to the branches of the fifth nerve. Let us inquire how it comes about that the jaw is too contracted to contain its full complement of teeth. Darwin, in his work, the "Descent of Man," gives the following reasons:—" The early male forefathers of man were probably furnished with great canine teeth, but as they gradually acquired the habit of using stones, clubs and other weapons for fighting with their enemies or rivals, they would use their jaws and teeth less and less. In this case the jaws, together with the teeth, would become reduced in size, as we may feel almost sure from innumerable analogous cases." Mr. Darwin endeavours to show that the disuse of the jaws in sexual warfare tended to their diminution in size and power. The following extract from the same work will show that partial disuse of the jaws in mastication is also an important factor. He says: "It appears as if the posterior molars or wisdom teeth were tending to become rudimentary in the more civilised races of man. I have been assured that they are much more liable to decay, and are earlier lost than the other teeth. They are also much more liable to vary, both in structure and in the period of their development, than the other teeth. Professor Schaafhausen accounts for the difference between the races by 'the posterior dental portion of the jaw being always shortened in those that are civilized,' and this shortening may, I presume, be attributed to civilized men habitually feeding on soft cooked food, and thus using the jaws less." Speaking again of the effects of the increased use and disuse of parts, the same writer says: "From the correlation which exists at least in some cases between the development of the extremities and of the jaws, it is possible that in those classes which do not labour much with their hands and feet, the jaws would be reduced in size from this cause. That they are generally smaller in refined and civilized men than in hardworking men and savages is certain." Thus, then, we have three more or less cogent reasons for the diminution in size of the jaws. Add to these the fact that in civilized races men are apt to choose wives with small jaws, that is to say, of a refined cast of feature, therefore the offspring will be sure to have this feature reproduced more or less. The jaws being of a tissue more yielding than that of the teeth, changes take place in the former more rapidly than in the dense dentinal tissues, and hence we have the phenomenon of an overcrowded dental arch

Next, let us consider the effects of this overcrowding upon the wisdom teeth. First, difficult and painful eruption. The eruption of wisdom teeth is often the cause of pain and even of serious illness. Neuralgic and rheumatic pains, swelling, inflammation and even ulceration may occur. The pain is not always confined to the affected part, but may be felt in the ear and has been known to proceed as far as the clavicle, while the inflammation may affect the tonsils. Wedl speaks of difficult eruption of wisdom teeth being accompanied by a very obstinate cough like whooping cough, and of cases in which very obstinate attacks of dysentric diarrhœa which continued five, six or seven months have occurred. The eruption of the upper wisdom tooth is not as a rule so painful as that of the lower. In the upper the malposed tooth generally points backwards or outwards, and the worst that happens is the contusion of the opposing mucous membrane about the base of the coronoid process or of that of the cheek. In the lower, where it is a more serious matter, the trouble may not be caused so much by the abnormal position of the crown of the tooth (as in the upper jaw), but rather because the horizontal ramus of the jaw is so short that the crown can only be partially erupted, if at all. Besides, the ramus of the lower jaw is of dense unyielding bone, while the tuberosity of the upper is of a more cancellous structure. When the jaws are brought together the mucous membrane is contused and great pain, inflammation and suppuration may ensue, the inflammation proceeding to the adjoining tissues of the cheek and fauces. Trismus or tonic spasm of the muscles of the jaw sometimes supervenes and the lymphatic glands may become swollen and tender.

M. Nelaton and other writers quote cases in which the symptoms in painful eruption of wisdom teeth have been mistaken for scrofulous caries of the jaws, for syphilis and for cancer.

Secondly, impacted and unerupted wisdom teeth. Wisdom teeth in the lower jaw are often impacted between the dense unyielding ramus and the also unyielding second molar, giving rise to symptoms of different degrees of severity. As a rule the tooth in these cases has a foward horizontal direction, in consequence of its vertical growth being prevented by the resistance of the bone above it. It is thus tightly wedged. The consequences of this are chiefly the following: Neuralgic pains, swelling, inflammation and suppuration, trismus, dentigerous cysts; caries, absorption and necrosis of the second molar. Instances are not wanting in which partial paralysis, epilepsy, delirium, mental derangement and suicide have been the results of impaction, and I think to these results may be added the danger of the performance of severe operations, through the cause of trouble not being properly understood. I shall briefly quote a few cases in point. I have here a specimen of an impacted wisdom tooth, kindly given me by Mr. Pattinson, which was the cause of much suffering of a neuralgic kind. The wisdom tooth was buried beneath the gum, and extensively carious. Mr. Pattinson, finding that it was impossible to extract the wisdom tooth without previously extracting the second molar, did so, the result being complete relief. Mr. Salter gives an instance of suppuration extending along the jaw from an impacted wisdom tooth, accompanied by pain and swelling, with nearly complete closure of the lower jaw. The patient had been attended by a practitioner who had mistaken the cause of his trouble. His face was permanently disfigured by cicatrices, and in their midst was a mass of pouting granulations about the size of half-a-crown, from which pus was being discharged. On exploration with a probe the cause of the trouble was found deeply inpacted at the base of the coronoid process, the tooth pointing forwards and outwards. After gradually wedging the mouth open for a period of three weeks, the tooth was with great difficulty extracted through the mouth, thus saving the patient from a severe operation. Mr. Coleman mentions a somewhat similar case in which the cause had been overlooked, and the jaw had been trephined in the hope of opening up an abscess. Relief was obtained when the cause of trouble (a tooth) was removed. Trismus is not unfrequently a consequence of impacted wisdom teeth. But, first of all. I should like to remark that the definition of trismus among writers on dentistry seems to vary. Mr. Salter terms it a spasmodic contraction of the muscles of the jaw, continuous and of a truly tonic character. Mr. Heath says the term, as generally used, is etymologically incorrect, as it is applicable to the grinding and gnashing of the teeth in convulsions rather than to the tonic spasm of tetanus. Mr. Morgan Hughes relates a case occuring in the practice of Dr. Mapother, of Dublin, in which a lady of twenty-four suffered from trismus for eighteen months, due to impaction of the lower wisdom tooth (Mr. Hughes does not say whether the closure was mechanical as well as reflex). The central incisors could only be separated two lines. The second molar and wisdom tooth were extracted, and, although the trismus had lasted so long, the stiffness soon subsided. In ordinary cases of dentigerous cysts, the cause is very obscure, but, as Salter says, "When a wisdom tooth is impacted and held back behind a second molor, the irritation consequent upon a restrained position may account for it;" and there is no doubt that dentigerous cysts, resulting from impacted wisdom teeth, are comparatively frequent and serious. I quote a case taken from a memoir of Dr. Forget, of Paris, showing to what extent dentigerous cysts of this sort may go. The patient, a woman, exhibited a swelling of the right half of the lower jaw about the size and shape of a hen's egg, bounded in front by the second incisor and behind by the coronoid process. Several of her teeth on the same side had fallen out, and she had more or less pain for ten years. Lisfranc resected the half of the jaw, and the patient was discharged cured. The examination of the section showed a development of the body of the jaw, formed by the two tables of the maxilla, which were very thin and reduced at many points to the mere thickness of the periosteum, and filled with carious and purulent fluid. The bottom formed by the base of the bone, very much widened, presented in projection the crown of the wisdom tooth firmly enclosed in the base of the coronoid process. The anomalous position and regular development exhibited by the tooth in this vicious situation can leave no doubt as to the part it had played in the production and evolution of disease of the bone. It could not become enlarged without exerting a continual pressure on the neighbouring teeth, causing prolonged suffering, inflammation of the gums, decay, loosening and spontaneous falling out of the other teeth.

Sir John Tomes and Messrs. Salter and Coleman all mention cases in which the pressure of the impacted wisdom tooth has produced absorption, erosion, or necrosis in the second molar, and they all give one the impression that this takes place through the direct pressure of the wisdom tooth. Sir John Tomes says: "The posterior fang of the second molar was much eroded by the pressure of the wisdom tooth." Mr. Coleman gives an example of an unerupted wisdom tooth, "which by pressure has caused absorption of the approximal surface of a second molar." Mr. Salter says: "The posterior fang of the second molar is apt to be eroded by absorption (caused by an impacted wisdom tooth), and the fang may be so much absorbed as to open the pulp cavity of the tooth, and even to pass through it and erode the posterior surface of the right fang." That these erosions or absorptions do take place there can be no doubt, but that they are made by the direct pressure of the wisdom tooth is open to question. I should like to hear some opinions on this point.

I have now enumerated the chief troubles arising from impacted and unerupted wisdom teeth. Such teeth very often give no troble, and they are frequently found out only by accident—as in the remarkable specimen of Sir E. Saunders, in which the wisdom teeth were found imbedded high up in the ramus, the crown reaching nearly to the level of the sigmoid notch—but as a rule they do give trouble sooner or later.

I shall now pass on to irregularities in size and shape of the wisdom teeth, including exostosis and enamel nodules, and union of second and third molars, together with special accidents in their extraction. I shall, also, briefly mention the points to be taken into consideration when deciding whether to extract the wisdom tooth or the second molar, and lastly I shall mention a case of reversion of the wisdom tooth.

We have it on the authority of Professor Flower that the wisdom tooth is, of all others, the one most frequently found suppressed. It is also the tooth in which the greatest variation takes place, both in size and shape. I cannot do better than quote the words of Sir John Tomes: "No rule can be laid down for the form and number of the roots of the *dentes sapientiæ*, so variable and inconstant are the forms assumed by these teeth. In one case the tooth is terminated by a single conical root; in another, the one is replaced by five or even six small roots." Thus we see that the variation from the typical molar found in apes and savages is very great, and there can be no doubt that in succeeding generations these teeth will be lost. When the wisdom tooth is abnormally small, it is on this account that it is tolerated in the often contracted jaw; but when on the other hand, it is normal or abnormally large, the trouble that it brings, both in and after eruption, has already been dwelt upon. Although exostosis and enamel nodules do not belong to the special pathology of the wisdom teeth strictly speaking, yet when we consider the close connection of those teeth to the branches of the fifth nerve, we can understand how they cause more intense suffering than similar disease in the first or second molars. I have here a specimen of an upper wisdom tooth, kindly placed at my disposal by Mr. Boyd Wallis, in which a small enamel nodule was the cause of many years of intense neuralgia, for which advice had been sought from the first physicians of the day. Mr. Wallis extracted the tooth, not with the idea of relieving the neuralgia, but because of the malposition and consequent worthlessness of the tooth. However, the extraction removed the cause of suffering, and the patient has been relieved ever since. Here is a tooth, a lower wisdom, which, as you will see, is much exostosed, and was the cause of closure of the jaws and much suffering. The tooth was lent to me by Mr. Marcus Davis by whom it was extracted withgreat difficulty.

The cases in which cemental union has taken place between the wisdom tooth and second molar are somewhat numerous, but sometimes the union takes place between the dentine and enamel of the respective teeth; in this case the teeth have a common pulp chamber. In the cemental union junction has no doubt taken place after the crowns were formed and while the roots were forming. In the latter case the more intimate union has taken place in the early stages of development. I have two cases here of cemental union kindly lent me by Mr. Gaddes, and I have endeavoured to depict some somewhat similar ones copied from Tomes and Wedl, one case being that of a supernumerary wisdom tooth cemented to the normal one. In these abnormally formed wisdom teeth there are always two dangers attending their extraction. In the upper jaw there is the danger of damaging the tuberosity, and in the lower the danger of injuring the inferior dental nerve. In cases like those we have just seen, great care should be exercised if extra resistance be shown when using the forceps, as the carrying away the tuberosity may result in complete deafness on the injured side. For the same reason the elevator should not be employed to an upper wisdom, though in the lower it is invaluable, as so often the backward curve of the roots allow of the tooth being displaced with comparative ease. In the lower jaw the inferior dental canal may perforate the fang of the wisdom tooth, so that an extraction may cause loss of sensation on the same side for greater or less periods. Or, in a difficult extraction of a lower wisdom tooth, the nerve trunk may be injured.

As a rule, when there is a doubt as to whether the second or third molars should be extracted, it is better that the wisdom tooth should be removed, as it is more liable to decay and is not so useful for mastication. But if, on the other hand, the second molar is carious or loose or necrosed, or it is impossible to extract the wisdom tooth through closure of the jaws or impaction, the second molar should be removed. In cases of suppuration caused by the wisdom tooth and involving the second molar, the wisdom tooth should be extracted.

I shall now speak briefly of reversion of the wisdom tooth—that is to say, of cases in which the tooth has been formed upside down. Sir John Tomes is the only author whom I have consulted who mentions the fact at all. He gives two cases, one being a reverted wisdom tooth, the fangs of which were interlocked with those of the second molar and extracted with it. The other case is one in which the crown was directed outwards towards the cheek;

therefore, I should say that it was not a case in which, as he says, " the direction was completely reversed," because for *complete* reversal the crown should be buried in the jaw and the root should point towards the gum. I have here a tooth which I extracted from a patient in this hospital, a woman of fifty-one. There was a tense painless swelling on the left side of the palate, consequently the removal of several molar and bicuspid stumps on the affected side was accomplished, the result being the subsidence of the swelling. Before I extracted this tooth I naturally thought it was a *wisdom tooth stump*, instead of which I found to my surprise that the tooth had erupted fang foremost and that the crown had been buried in the alveolus from which I had dislodged it. Upon enquiry I found that the tooth had never given trouble (unless the swelling spoken of was the result of this tooth), and it had evidently taken its share in mastication, as we may judge by the way in which its fang is worn down and the high polish it has acquired. This case differs from those mentioned by Tomes in that the tooth had no connection at all with the second molar and it was not horizontal or oblique, but simply upside down, the crown where the root ought to be and *vice versa*. The crown is perfectly formed and the pulp canal is closed by formation of secondary dentine. The points I should like briefly to discuss are these: What caused the reversion of the tooth? How can we account for the eruption of the tooth in a reversed direction? When was the secondary dentine formed? What prevented the tooth being rejected as a foreign body?

I can give no satisfactory theory of its reversion, except that the wandering of the enamel germ, in the first instance, together with the pressure of the second molar, may have been the cause. As to the cause of its eruption fang first, I think that as so little is known about the forces that regulate the normal eruption of teeth, that it is almost useless to theorise about them when appearing as this has done. It may be probable that no eruption has taken place at all, but that the gum has recoiled sufficiently to lay bare the fang. The occurrence of secondary dentine, I think, is very interesting. It must have been formed prior to the eruption of the fangs, as, of course, masticating would have been fatal to the pulp, and the pulp must have been alive when it produced the secondary dentine. I can only conceive that the abnormal pressure which, I presume, altered the position of the tooth would tend to set up irritation of the surrounding parts, which irritation being transmitted to the pulp, was sufficient to cause the secondary dentine and consequently no pain on eruption.

And lastly, what prevented the tooth beidg rejected? The pulp was dead, the crown—through which no nutriment or connection could, as most authors aver, take place with the periosteum—was fairly large, and against these we have a very narrow band of living cementum. I suppose the reason is that there was just sufficient vitality remaining in this narrow strip of cementum which, taken in combination with the fact that the thick end of the wedge was locked in the alveolus instead of the thin one (as is usual), was sufficient to prevent the rejection of this remarkable tooth.

In conclusion, I must express my thanks to the many friends who have helped me by lending me specimens and in other ways, and I must also thank you all for the patience you have shown during the reading of this paper. I have no doubt there are points which I have omitted and others upon which I might have dilated more fully. The subject is a very interesting one, and I think that any remarks, whether new or old, are serviceable. It is good for us to be told what we do not know, but it is also very useful to be reminded sometimes of what we do know.
London Dental Record.

ARTICLE III.

THE SUCCESSFUL TRANSPLANTING OF A PIECE OF RABBIT'S CORNEA INTO THE HUMAN EYE, FOR THE PURPOSE OF RESTORING SIGHT TO A BLIND MAN.

BY PROF. JULIAN J. CHISOLM, M. D., UNIVERSITY OF MARYLAND.

Robert Gross, aged 29, a short healthy man, lost both of his eyes three years since from the effects of caustic lime. In each eye the conjunctiva sloughed from over the entire face of the cornea and parts of the lids, leaving the upper lid adherent to the whole corneal surface in the left eye, and both lids firmly adherent to each other and to the eye-ball in the right eye. One year since I liberated the upper lid in the left eye by facing it with a large flap of fleshly substance dissected up from the cornea. Some weeks afterwards, I liberated the right lid, first from the lower one, and then from the surface of the cornea. Finding no mucous membrane to face the lid with I prevented the reunion of lid and cornea by using a long tongue of skin from the outer surface of the whole length of the upper lid. After dissecting up this skin flap I made at its root near the outer canthus a vertical slit through the whole thickness of the lid. I then drew the long tongue of skin through the slit, and twisting the pedicle on itself so as to make its raw surface come in contact with the raw surface of the lid secured it in position by sutures. This novel substitution succeeded well. It now permits this eye to open and expose its cornea.

These operations did not, however, improve the transparency of the cornea. Granulations sprang up upon the raw surface, and soon each cornea was again covered entirely by a fleshly conjunctiva, shutting out all chances for useful vision. There was every reason to believe that all other parts of the eye, except the opaque cornea, were normal. There was good light perception but no defination whatever. The case was deemed incurable after a second attempt had been made on each eye to remove the obsuring surface from the cornea by dissecting off this fleshy layer.

Recently Dr. L. Webster Fox, of Philadelphia, had performed the operation first suggested and executed by Prof. von Hippel, of Giessen, Germany, of transplanting a piece of healthy rabbit's cornea into a hole cut out to receive it in the opaque cornea of the human subject. The rabbit is selected, because it is an animal readily obtained, is easily manipulated, and has a large eye. The cornea of any animal could be equally used. My patient seemed one peculiarly adapted to this experiment. Dr. Fox explained to me the mode of operation and very kindly offered me the use of the special apparatus of Prof. von Hippel for making the section, without which the operation could not be successfully performed.

The operation is a speces of skin grafting. Skin grafting I had often done successfully, both in making eye lids, and in adding to the conjunctival surface to prevent the readhesion of the lid in symblepharon. Attempts had been made at corneal transplantation but with no success, because the transplanted piece, however carefully adjusted, always sloughed away, or would be washed away by the ever escaping aqueous secretion. To make a successful graft the anterior chamber must be kept intact. Up to the time of von Hippel's operations this was a factor impossible to be obtained. The step of all importance in preparing the place for the graft is to remove a circular piece of corneal tissue down to Descemet's membrane, leaving this delicate layer of the lining membrane of the anterior chamber undisturbed. The eye ball must remain full, with no leakage whatever of aqueous to disturb the growing together of the graft and its bed. Fortunately the anatomy of the eye readily admits of this. The various layers of the cornea are much more intimately united to each other than is the innermost layer to the membrane of Descemet. So that if these layers all be divided the plug of cornea can be readily separated from the basement membrane or lining membrane of the aqueous chamber. The trephine worked by wrist movement can not affect this. Prof. von Hippel's ingenious trephine permits this essential part of the operation to be perfected.

The instrument itself is a modification of the well-known artificial leech. The circular knife is made to revolve by clock work, placed in the handle of the instrument, and yet not giving much weight to it. The slightest pressure upon a small knob in the head of the handle starts the clock movement and causes a rapid revolution of the circular knife. With this instrument not only is the piece cut out from the human cornea, but a duplicate piece of identical size is cut out of the clear cornea of the rabbit, and the patch must therefore accurately fit into the bed, prepared to receive it. It only needed dexterity in the use of the instrument to make a successful experiment.

Familiar as I am in the use of delicate eye instruments, I anticipated no trouble in going through the various steps of operation. I wisely concluded, however, to begin on the eye of a sheep. From the slaughter house I obtained a couple of fresh heads thinking that operating on these four eyes would give me all the needful experience. It did not require many minutes to show me that I could destroy eyes with the greatest expedition. To hold the delicate trephine so vertically as to cut layer by layer of the cornea and not cut at once, by irregular one-sided pressure, through into the anterior chamber, could only be required after much practice. Many hours and a great many eyes were made use of before this delicacy of manipulation was required. Finally I found myself able to remove the circle of corneal tissue satisfactorily and leave the membrane of Descemet intact. When I had acquired this facility I could also go through this membrane uniformly and take out an entire plug of cornea, which was an important part of the operation in the preparation of the graft.

All being now in readiness, on June, the 5th, the delicate operation of transplanting a clear piece of rabbit's cornea into the opaque cornea of the blind patient was undertaken at the Presbyterian Eye and Ear Charity Hospital of Baltimore. When the patient was placed upon the operating table and the lid space filled with cocaine, a large rabbit was well secured to a vivisection frame and his eye also filled with the cocaine solution. Just before the section the conjunctival cavity of each eye was filled with the mercurical antiseptic solution in constant use at the Hospital. The trephine knife and other instruments had been put in absolute alcohol so as to guard as far as possible against inflammatory sequelæ. The trephine was applied vertically to the centre of the cornea and a superficial groove three sixteenths of an inch in diameter was made. As the surface was very vascular, blood oozed freely at first, necessitating constant sponging to enable me to reapply the instrument in the groove so as to cut layer by layer of corneal tissue. Upon inspection it was readily seen that where the cornea had been cut sufficiently deep the edges of the circular piece would shrink away from its opposing wall and cup inwards. In the reapplication of the trephine a little more pressure would then be made in the opposite direction for the purpose of avoiding injury to the membrane of Descemet. Finally the entire circular flap seemed loose, by its general shrinkage from the cut edge of the cornea. One edge of it was seized with an iris forceps and the circular flap was peeled out of its position, the adhezion between the lower layers of the corneal plug and Descemet's membrane yielding readily to the traction. The clean uninjured membrane of Descemet came beautifully into view and through it the patient saw for the first time in three years.

The receptacle being now ready, attention was turned to the rabbit's eye. The graft had to be of the entire thickness of the cornea including the membrane of Descemet. In a few seconds this was completely cut through, the trephine sinking deeply into the acqueous chamber. When the instrument was removed the graft did not come away in the hollow of the trephine as was expected, but was left free completely separated, in the opening through the cornea, and was taken out by a delicate forceps. Its Descemet surface was readily recognized by its concavity, the flap showing distinctly its concavo-convex surfaces.

The adjustment in the hole of the human cornea was soon made and the accuracy of the fit was very satisfactory. The rabbit's cornea is thinner than the human. The two membranes of Descemet gave the proper thickness and established the continuity of the anterior surface. By suction as it were, the graft stuck in its new position. As there had been no perforation of the anterior chamber there was no escape of aqueous to disturb or dislodge the graft. The lids was closed by compress and bandage, with the usual antiseptic precautions in general use at the Hospital.

For five days the eyes remained undisturbed. The patient had no discomfort whatever, nor evidences of any inflammatory reaction except in itching on the fifth day. When the compress was removed the cloth was found somewhat matted from mucus discharges during the five days of its presence on the eye. The secretions were removed from the lash border by a soft sponge wetted with the antiseptic solution. When the lids were separated the graft was found firmly united throughout ¾ of its circumference. At one side there was a little groove of separation visible. As its lower face was uniformly united to the human Descemet's membrane consolidation was perfect. During the process of union the graft had lost its transparency. Through the opaque patch the patient could discern no object, only a flood of light, very much greater than at any time during his three years of blindness.

As the operation was a novel one, and so far successfully completed, I concluded to duplicate the same on the right eye also. In this case as in the previous operation all the layers of the corneal tissue proper were removed leaving the membrane of Descemet undisturbed. At the end of five days I found my second graft equally united to the centre of the right cornea in the hole prepared for it by trephining. This graft so transparent when inserted had also become cloudy during the process of union to the contiguous human cornea. Both eyes somewhat resemble the placing of a pearl in the centre of the pannitic surfaces.

These successful operations in the same subject establish a very important advance in ophthalmic surgery, viz., that with proper precautions a corneal graft from an animal can be successfully transplanted into the human eye, and that the absence of blood-vessels in the graft is not an obstacle to its fusion with contiguous living tissue. To what extent the vascular condition of the cornea of these pannitic eyes aided in the speedy union of the graft is a matter for consideration. The liberal supply of blood-vessels, making a vascular wall in contact with the edges of the corneal graft, must have aided materially in nourishing it and finally in establishing the direct growing together of these contiguous surfaces. The serous surface of Descemet on the graft united promptly with the exposed upper surface of Descemet's membrane of the human eye. It was an epithelial layer of a serous surface coming in contact with a raw surface and prompt union occurred. Union could not have taken place had the graft been inverted, turning its conjunctival layer inwards.

The next point of great interest is as to the extent of clearing of these grafts. Will they regain their transparency, now that the infiltration so needful during the process of primary union of the animal graft to the human cornea is no longer necessary? This process of clearing up has already started in the eye first operated upon. When the bandages were removed only a flood of light was experienced. Three weeks have now elapsed since the first operation. Light is commencing to stray through the thining flap in sufficient amount to cast shadows on the retina. Already the blind man can detect large objects as they move in several feet front of him. From the progress made in two weeks there is every reason to expect that in a short time he will have vision enough to guide himself, when for three years he has been led about.

Each of these eyes was in every way normal except the thick cornea. From the membrane of Descemet back to the retina all structures are sound. Now a healthy piece of cornea, the full size of the pupil is inserted over the pupilary area. It has become firmly united to the human eye, and is as much a part of it as if the man had been born with it. Already the improvement in the recognition of objects, however dimly, amply repays the patient for the anxieties of the experiment. His daily experience shows a slowly improving sight and holds out a very strong hope that he is going to regain much that he formerly enjoyed. Further changes as they become visible to patient or surgeon will be carefully noted and reported.

It is sincerely hoped that this successful experiment in conservative surgery may give so much benefit to a class of hopelessly blind people as to place corneal transplanting in the list of available operations.—*Md. Med. Journal.*

ARTICLE IV.

EMPYEMA OF THE ANTRUM.

BY G. W. WATSON.

CASE I.—Some 18 months ago a gentleman called on me complaining of toothache. The tooth referred to had quite a superficial cavity in it, which I filled; but on examining his mouth, I found that he had several abscessed teeth in the upper jaw, and noticed a peculiar odour, which

I knew to associate with antral or nasal trouble. I asked him if there was anything wrong with him. He acknowledged that he had been suffering from a discharge of pus from the right nostril, accompanied by severe frontal headache for 18 months, and had been under treatment by an expert, who had, however, done no good. He had also consulted two experts in London, one of whom diagnosed the case to be one of ozæna; the other said there was a tumour in the frontal sinus, which was the origin of the trouble, and would require to be removed. After a careful examination, I came to the conclusion that it was a case of antral empyema, and told him that I thought he could be put all right if he allowed me to remove all the diseased teeth in the upper jaw and make an opening into the antrum. After having consulted his friends and medical attendant, he agreed to be operated on. The condition of patient previous to operation was this:—

Great depression of spirits, severe frontal headache, which was almost constant, the parts over the frontal sinus and superciliary ridges were painful to the touch, and there was a copious discharge of a muco purulent fluid from right nostril, so much so that if he stooped a drop would fall from his nose; while the odour coming from him was perfectly overpowering, and the sense of smell had almost entirely gone. The patient attributed his condition to a severe chill caught while travelling to London. In presence of his medical attendant, I gave the patient a full dose of nitrous oxide, and removed the first upper bicuspid and molar on the right side, and two teeth on other side also, and made a free opening into the antrum through the socket of the first pre-molar, which I found communicated with the antrum. As a confirmation of my diagnosis, a flow of pus was obtained from the antrum on opening into it, and on syringing the fluid passed quite freely through the middle meatus into the nose. I moulded a portion of gutta-percha round a piece of iron binding wire, and used this as a temporary plug for the opening into antrum, till a proper silver drainage tube could be made. The patient was instructed to wash out the antrum thrice daily with a hot saturated solution of boracic acid. In the course of a fortnight the frontal headache had almost gone, and patient felt very much better in every respect. The patient was told that in all probability it would be a year before he was all right again, and such was the case. In two or three months the pain in region of frontal sinus had entirely disappeared, recurring again slightly later on as a result of nasal catarrh. The syringing of antrum daily, either with solution of zinc chloride or boracic acid, gradually brought the mucus membrane into a healthy condition and a subsidence of the discharge, and about the end of the year of treatment I removed the drainage tube, and the opening into the antrum closed up in the course of two or three days. At present time, six months since the completion of case, the patient is in perfect health. I have no doubt that the abscessed teeth were the origin of all those symptoms, causing, in the first place, irritation, then inflammation and alteration of secretion in mucus membrane of antrum, and the extension of this inflammatory condition to the nasal membrane, both from continuity of surface and the passage over it of the irritating purulent discharge from the antrum. The pain experienced in the region of frontal sinus, and which no doubt misled the London expert in his diagnosis, was, I have no doubt, purely reflex. The most instructive part of the case is, that none of the medical gentlemen ever suspected or even looked at the teeth to see what condition they were in.

CASE 2. History.—The patient was a clerk, æt. 42, of rather a delicate appearance. At beginning of last July he was suffering very much from toothache in the upper jaw, and a feeling as if he had caught cold. He went one evening to a flower show, returning home on the top of a tramcar. Next day he had a severe rigour, was very sick, and vomited frequently, the illness culminating in nasal and gastric catarrh. This illness lasted for about a mouth, during which he was attended by his doctor. The right eye became swollen, and was useless for three or four weeks, and the right nostril was blocked by secretion, and continued so till he came into my hands some months later. His doctor took him to an expert in August, as no good had been obtained from douching the nasal cavity. He diagnosed the case to be one of ozæna, and said there was also diseased bones in right nasal cavity, and recommended patient to continue syringing the nose with boric solution. He was sent to the country for change of air, and remained away about a month. On his return it was found that matters were still in the same condition, the right nostril quite closed, and a constant discharge of a muco-purulent fluid, accompanied by the usual powerful odour. A week or two after this, the expert noticed a slight bulge of the cheek on right side, and thinking the antrum might have something to do with the condition of matters, told him to call on me. This was on October 22nd. In passing, I may say that the patient himself suggested to the doctor that the teeth might have something to do with it, as they had been so troublesome; but he always pooh-poohed the idea. On examining the patient, I saw it was a case of antral empyema, consequent on the presence in the jaw of abscessed teeth. Next day, in presence of his doctor, I gave patient a deep dose of nitrous oxide, and removed the second upper bicuspid and first and second molars on the right side, and on a subsequent occasion two teeth on left side, and made a free opening into the antrum through the socket of the second premolar. On attempting to syringe out the antrum, I found that for a considerable time nothing would come; but eventually, after using very great force with the ball syringe, a tablespoonful of caseous-looking purulent secretion came away from nostril, some of it of a blackish colour from pigmentation. In spite of this only a small stream of the injected fluid could be forced through the antrum and nose, and he could not breathe through the nostril. However, at eight o'clock the same evening, he managed to do so for the first time for months. On passing a probe into the antrum, I could detect bare bone on its nasal wall. A silver drainage tube was put through, the opening into antrum being kept in position by a piece of thin gold wire round the first pre-molar, and patient was instructed to syringe through the tube with saturated solution of boric acid thrice daily, keeping the tube closed with a plug of cotton wool in the intervals. Next day a piece of dead bone about the size of a small finger nail came away from the nostril while syringing, and since then several small fragments have been removed by the same means.

After using boric solution for three or four weeks with great advantage, I told him to use zinc chloride, two grains to the ounce to begin with twice daily, and the boric solution once; under which treatment and the use of tonics he has rapidly improved, and at the present time (March) the secretion has become very much less, the patient being able to do with one handkerchief per day, when he used to require a dozen. The nostril is quite free and there is no indication of diseased bone, the odour also being very much less. I took a photo-micrograph of a small portion of the caseous pus that came away after opening into and syringing the antrum. This I now hand round. It swarms with micrococci and bacilli. As the case went on, I made periodical microscopical examination of the secretion, antrum and nose, and found that there were fewer of these organisms each time I examined, and also less of the pus cell, and more of the normal mucous elements present. This patient was shown to the members.

I may say that I have had other two cases during the year—one where the disease had been going on for five years, the true origin of which, however, had been overlooked by several medical practitioners whom he had consulted. He was put all right, after being treated for about three months. The other case was the work of an un-qualified practitioner, filling a canine tooth over an exposed pulp.

In conclusion, I would urge upon all who come across such cases the thorough examination of the mouth, the removal of all abscessed teeth, and the filling of all those that require it.—*The Dental Record.*

ARTICLE V.

RESUSCITATION IN THREATENED DEATH FROM CHLOROFORM.

BY PROF F. T. MILES, M. D., UNIVERSITY OF MARYLAND.

It being now generally conceded that the best means of resuscitating patients threatened with death during the inhalation of chloroform is to invert the position of the body, it is a matter of interest to consider how this change of position accomplishes the result aimed at. The explanation usually given, that the blood is sent in increased amount to the centrès innervating the heart and the apparatus of respiration, seems unsatisfactory, when we reflect that the cranial cavity is so nearly a completely closed one that the amount of its fluid contents can scarcely be expected to vary to any considerable extent through gravitation. Again, if the heart has ceased contracting, the effect of gravity will be principally upon the blood in the veins, diminishing its onward flow, and thus tending to arrest the movement of the blood in the capillaries. Now we know that stopping the movement of the capillary blood is one of the most prompt and effectual means of destroying the activity of the nerve-centres. Again, the danger to life from the action of chloroform arises from stopping (I do not say paralyzing) the heart, and while we know of a cardio-inhibitory centre in the medulla oblongata, the excitement of which will slow, or stop the heart, we know of none whose excitement will increase its strength or arouse its activity. We must therefore look for some other explanation of the beneficial effects of the inverted position.

It appears to me that the strikingly good effect obtained by inverting the position of the body results from the direct excitement of the heart caused by the flow of blood into the right auricle (and ventricle), which takes place when the body is in that position.

The liver is roughly computed to contain one fourth of the blood of the body The length of the vena cava inferior, from the point where the hepatic veins open into it to its ending in the right auricle, is quite inconsiderable, and it is held open by its adherence to the comparatively unyielding substance of the liver. It is further kept patulous by its attachment to the tendon of the diaphragm just before emptying into the auricle. The hepatic veins, in their course through the liver to empty into the vena cava, cannot collapse, being adherent to the hepatic substance. All this is favorable to the pouring, so to speak, of the blood from the liver into the right auricle and ventricle when the body is inverted. We know from experiment that one of the most potent means of exciting the excised frog's heart to renewed activity, after it has ceased to beat, is to fill its chambers with blood or other fluids, and I do not see why the sudden distension of the auricle in the human body should not act in a similar manner.

Moreover, it is not impossible that a mechanical influence may contribute to the beneficial effects, inasmuch as the inversion of the body is brusquely made, and thus the sudden pressure of the heavy liver against the diaphragm and heart, may act as a mechanical stimulant to the latter.

I have seen one case at least in which, during the inhalation of chloroform, death seemed imminent from stopping of the heart, and in which the organ was stimulated to contraction by pretty heavy blows administered with the open palm over the cardiac region. I see no reason why we should not use mechanical stimulation more energetically in case of stoppage of the heart during the administration of chloroform, even to the pricking of that organ with a needle through the wall of the thorax at the point where it is uncovered by the lung, with or without the transmission to it of the electric current. Of course, such procedures would be confined to desperate cases.—*Medical Record.*

ARTICLE VII.

PAINLESS EXCAVATION BY ANÆSTHETIZING THE TOOTH WITH ETHER SPRAY.

BY DR. OTTOLENGUI.

Isolate the tooth and one or two others on each side of it, with rubber dam. After using bibulous paper, apply dry heat, not too hot, with a chip blower. These blasts should be continued until the whole tooth becomes whitened, which is sufficient evidence of dehydration.

Having done this, the next step is to anæsthetize the fiber. To do this use the purest ether, thrown on with a continuous spray apparatus. An atomizer with double bulbs and various tips is best. The length of time that this should be continued may be known by watching the patient's eyes. The ether will cause always more or less pain, therefore, the patient should be warned of this in advance; it being also explained that the pain will be a decreasing one, and that the result will be that the tooth may be prepared without pain. Then it will be found that the patient thus prepared will endure the pain, but will demonstrate his suffering by contracting the eyebrows; a gradual relaxation of those parts will ensue till a placid, indifferent expression will present, when it may be understood that all pain has ceased; the spray may be continued a little beyond this and then the tooth operated on. The result of this method is invariable. Wherever the conditions are complied with success is inevitable. There is no exception to this statement. The patient and operator are both delighted always; the former being saved pain, and the latter time, and if of a sympathetic nature, nervous exhaustion.

A few words of caution: The ether, if allowed to come in contact either with the mucous membrane in the mouth or with the cheek itself, is very unpleasant and often painful. To avoid the former a large piece of dam is required and each tooth should be securely tied. As to the latter, when either of the superior front teeth are to be operated on, a towel should be placed around the face and over the chin, passing up under and near to the tooth, and then held in place by a rubber dam holder, an elastic which passes behind the head, with a clamp at each end. This is so arranged that as the ether is sprayed it runs down towards and is taken up by the towel In other cases less accessible a piece of spunk must be placed near the tooth which will act similarly.

It has been objected that such treatment endangers the life of the pulp. Experiments have been made, the spray being pointed at the pulp itself, exposed, and such pulp has been saved alive afterwards. Another objection raised was that with the tooth so thoroughly under control as this process allows, there is a temptation to insert a filling which may give great trouble when the tooth returns to normal sensibility. This is answered readily. Such teeth must be filled, and whatever it is safe to fill them with without controling the sensitiveness, will be equally safe with the tooth anæsthetized. If the cavity is deep, a capping should cover the dentine before inserting gold.

After treating a tooth in this way, the operator is enabled to use cutting instruments at will for from two to five minutes, without causing the least pain. The method is better adapted to the upper teeth for the reason that the ether accumulating in the cavity of a lower tooth, prevents the full force of the spray being transmitted. Nevertheless if a piece of spunk be properly arranged to take off the excess the result will be as good in the inferior as in the superior jaw.

There is little left to say beyond the statement that if this method is only tried it will be adopted. A boon to both operator and patient is here offered, and it seems surprising how slow the profession are to even examine into the claims made. It is to be hoped that before many months may dentists besides the writer may be giving their patients the benefit of this immunity from the pangs of sensitive dentine.—*Archives of Dentistry.*

ARTICLE VI.

DEVITALIZING PULPS.

There are few things in dentistry that are so often unskillfully done as the application of arsenical paste for the devitalization of pulps. We believe that much of the pain which so many operators complain as attendant upon this process, is due to the wretched manner in which the agent is too often treated.

In the first place, perhaps the rubber-dam is not applied, but the saliva has almost unchecked entrance into the cavity and the paste is not left in proper position, even if it be not altogether washed out. All manner of debris is left in the cavity to obstruct the rapid action of the agent and to cause an unnecessary irritation. The paste is not applied directly to the pulp, but is placed almost anywhere so that it will be in contact with the tooth, and lastly, it is, perhaps, covered with cotton dipped in that abomination—a sandarach solution. What wonder that the results are unsatisfactory.

For the proper devitalization of a live pulp it is essential that the agent be placed in immediate contact with the pulp. All debris and loose particles should be carefully removed, and this can best be done—in part at least—by thoroughly rinsing the cavity with warm water.

Excavation is not essential, but the taking out of all debris is. The rubber-dam should be applied and the cavity dried as perfectly as possible. Then, the pulp being exposed completely at some point, a minute particle of paste should be directly applied, covered with a small cap cut from thin rolled tin or some other metal, and made concave by pressure with the rounded end of an excavator, and the cavity carefully sealed with wax, gutta-percha, or some impermeable covering. We have found modeling compound an excellent material when warmed. If this course is followed, pain will be the exception and not the rule, and should it unfortunately succeed it will be very fleeting in its character.

When the pulp exposure is from attrition or fracture, and there is no cavity of retention, a small concave cap may be made of wax, the paste placed in it, and the tooth being carefully dried and the wax warmed, it may be made to adhere sufficiently long for devitalization.

If any one really wishes to raise a toothache that shall cause him to be remembered, let him put arsenical paste in a wet cavity, the pulp being covered with refuse matter and decayed dentine, and then let him cap the climax of the outrage by thrusting into the outer cavity cotton wet with a sandarach solution. This will permeate the whole cavity, encapsule the arsenical paste and prevent its action, while it serves as a constant irritant. In a few hours it will decompose, and the cavity will become foul almost beyond conception. We think it is really the worst covering for a temporary dressing of which we have any knowledge, and we have had experience enough with it to be an expert in judging its demerits.

Does any one think that the method here recommended is too troublesome? Well, if his practice of dentistry rests upon a desire to avoid painstaking and labor, our advice to him is to drop it and seek some less irksome occupation.—*Independent Practitioner.*

PROGRAMME FOR THE JOINT SESSION OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

OFFICERS AMERICAN DENTAL ASSOCIATION.

Frank Abbott, President; C. R. Butler, First Vice-President; T. S. Waters, Second Vice-President; F. A. Levy, Corresponding Secretary; Geo. H. Cushing, Recording Secretary; Geo. W. Keely, Treasurer.

Executive Committee: A. W. Harlan, Chairman; S. H. Guilford, Secretary.

First Division—Committee of Arrangements: A. W. Harlan, W. C. Wardlaw, L. D. Shepard.

Second Division—On Credentials, Ethics and Auditing Accounts: A. O. Hunt, A. M. Dudley, S. G. Perry.

Third Division—On Voluntary Essays: S. H. Guilford, E. T. Darby, A. H. Thompson.

OFFICERS SOUTHERN DENTAL ASSOCIATION.

B. H. Catching, President; *J. H. Prewitt, First Vice-President; W. N. Morrison, Second Vice-President; J. Hall Moore, Third Vice-President; J. Y. Crawford, Corresponding Secretary; L. P. Dotterer, Recording Secretary, H. A. Lowrance, Treasurer.

Executive Committee: C. G. Edwards, Chairman; B. O. Doyle, W. McL. Dancy.

TUESDAY MORNING, 9 A. M.

Separate meetings of the two Associations for the payment of dues, the receiving of credentials, and the transaction of routine business.

AFTERNOON, 2.30 P. M.

Meeting of the different joint Committees for the examination of the papers to be read by them.

EVENING, 7.30 P. M.

As the joint session is only for scientific and social purposes, nothing but professional subjects will be discussed or acted upon.

Meeting of the joint session to be presided over by Frank Abbott and B. H. Catching.

The President of the Southern Dental Association will call the meeting to order, announce the prayer, and then introduce the President of the American Dental Association, who will deliver his address; after which the latter will introduce the President of the Southern Dental Association, who will then present his address. The President of the American Dental Association will continue in the chair for the remainder of that evening.

President Abbott's address; President Catching's address; discussion on the same. Reports of joint Committees and discussions thereon. Announcements from the Chair. Adjournment.

WEDNESDAY MORNING, 9 A. M.

Meeting of the joint session presided over by B. H. Catching. Reports of joint Committees and discussions of same. Announcements. Adjournment, 1 P.M.

AFTERNOON.

To be devoted to the work of the joint Committees or to business meetings of the Associations, if such should be necessary, or to Clinics

EVENING, 7.30 P. M.

Meeting of joint sessions, presided over by Frank Abbott. Reports of joint Committees and discussions. Announcements. Adjournment.

THURSDAY MORNING, 9 A. M.

Meeting of joint session, presided over by B. H. Catching. Reports of joint Committees and discussions. Announcements. Adjournment, 1 P. M.

AFTERNOON.

Committee work, or business meetings, or Clinics.

EVENING, 7.30 P. M.

Meeting of joint session, presided over by Frank Abbott. Reports of joint Committees and discussion. Announcements. Adjournment.

FRIDAY MORNING, 9 A. M.

Meeting of the joint session presided over by B. H. Catching. Reports of joint Committees and discussions. Announcements. Adjournment, 1 P. M.

AFTERNOON, 3 P. M.

Separate meetings of the two Associations for the selection of place of next meeting, the election of officers, and the transaction of such other business as may come before them.

EVENING, 7.30 P. M.

Meeting of joint session, presided over by Frank Abbott. Reports of joint Committees and discussion. Announcements. Final adjournment of joint session for discussion.

SATURDAY MORNING, 8.30 A. M. to 1.30 P. M.

Clinics.

AFTERNOON, 3 P. M.

Separate meetings of the two Associations for closing business.

The joint Committees will be called in the following order, and any Committee failing to respond will be passed and not again called until all the others have been.

The reports of these Committees will be written and offered by the Chairmen, and will specify the papers to be presented and the order in which they shall be read, and such subjects for discussion or such suggestions as they may wish to bring to the attention of the joint session.

All papers to be read before the joint session, except the two Presidents' addresses, must be placed in the hands of the Chairmen of the appropriate joint Committees, who will examine them and report those only they deem worthy of presentation to the joint session.

The following Rules of order will govern this joint session.

No member of either Association shall be entitled to the floor unless he is in good standing and his dues are fully paid.

No person shall speak more than twice upon the same subject, nor more than ten minutes in all, unless consent is given by a majority vote of the joint session.

No one shall be permitted to address the meeting before giving his name and residence, which shall be distinctly announced from the Chair.

When a paper has been read it shall at once be handed to the Secretary of the Association from which it came.

Any paper or report to be entitled to publication in the transactions must be placed in the hands of the Publication Committee by the 15th of September, 1888, and must be so prepared that the proof-sheets furnished the author shall be returned to the Committee without material alteration or addition.

Roberts' Rules of Order shall be the authority governing this meeting, if any is needed more than is embodied in the foregoing rules.

Attention is called to the first, second and third Rules of Order, page 12.

If gentlemen addressing the Association will give particular heed to these requirements, and will, when they rise to speak, announce in a loud and clear voice their name and residence, it will tend greatly to facilitate business.

A book for the registration of members will be found at the entrance of the place of meeting, and all members are requested to register their names and hotel addresses at the earliest moment possible.

The dental depots will be promptly closed at the hour for the opening of each session, and will remain closed until the adjournment of the same.—*Sonthern Dental Journal.*

Editorial, Etc.

DENTAL ORIGIN OF PYÆMIA.—Dr. Arthur Baker in a paper read before the Royal Academy of Medicine in Ireland and published in the *Dublin Journal of Medical Science*, says:

As pyæmia from dental causes is not very common, or perhaps has not been frequently recognized, the notes of a case which came under my own observation are, I think, deserving of record. Before, however, detailing my own case, I shall refer to some of the scanty literature on the subject.

In the recent edition of Tomes' "Dental Surgery," the author refers to seven cases of acute and chronic pyæmia of dental origin which he has collected from various sources, all of which proved fatal. Two of these, however, in my opinion were, strictly speaking, not pyæmic, as we now understand the term. In one, extension of an abscess connected with a lower wisdom tooth produced some severe unilateral glossitis, and mechanically suffocated the patient. In the other, splintering of the lower jaw in the removal of a tooth gave rise to an abscess, which found its way up the ramus, and through the foramina, ovale, rotundum, and spinosum, into the cavity of the cranium, where meningitis ensued, of which the patient died. The remaining five cases may fairly be classed as pyæmic, and as such deserve our attention, for they point to the fact that alveolar suppuration cannot always be treated as an affection of no moment, but may sometimes be attended with even fatal consequences. Unfortunately, details are wanting in the cases recorded by Mr. Tomes, upon which we might with advantage generalize.

Dr. R. J. Porre, at the International Medical Congress held at Washington in 1887, brought forward some cases of chronic pyæmia of dental origin, in all of which there was, fortunately, a happier termination than in those recorded by Mr. Tomes. Dr. Porre gives the following account of one of the cases observed by him :—The patient, male, good constitution and habits, suffered for the last thirty years from neuralgia, besides having constantly recurring furuncles and eruptions in various parts of the body, which would often for months become running abscesses. He experienced burning and itching eruptions of hands and feet, which would finally change to stubborn ulcerations. His bowels were either stubbornly constipated or exhaustingly loose. He suffered from frequent rigors and febrile attacks of varying intensity, profuse night sweats, retention of urine, serious constrictions of the bowels and urethra. Lancinating pains darted from the maxilla of right side to bowels, bladder, limbs, hands and feet, or to whatever part was locally affected at the time. This latter peculiarity, together with the discovery of a little pus exuding from the locality of the wisdom tooth, led to a final correct diagnosis of his case. The tooth referred to was extracted, and a speedy and complete recovery followed. Dr. Porre also read the notes of ten similar cases, which all yielded to the simple remedy of removing the offending tooth.

Mr. Frederick Eve, Curator of the Royal College of Surgeons, England, in a recent communication to the Odontological Society, whilst noticing the fact that in periodontal abscess, although the pus directly gained access to the bone, serious consequences rarely followed—yet related the case of a young man who had been troubled by an abscess in the region of the fangs of a second molar tooth. He attended the funeral of his grandfather, caught cold in the tooth, and died in three weeks of pyæmia.

Some interesting experiments on mice are at present being carried out by Dr. W. D. Miller of berlin, by inoculating them with the material obtained from gangrenous pulps. As these experiments are not yet concluded, it would be premature to do more than allude to them here; but from Dr. Miller's recent communication to the *Dental Cosmos*, he is evidently quite alive to the importance of investigating this source of pyæmia.

The following case occured in my own practice. I am happy to say that it was not fatal, and that I succeeded in curing the patient without sacrificing the offending tooth.

CASE.—Mrs.——, aged thirty-three, widow, consulted me in the beginning of November, 1887, about her first left upper molar tooth, which had given her pain from time to time. The patient appeared to be in excellent health, and presented no evidence of constitutional taint. She stated that the only illness she had had, excepting, of course, her confinements was a severe attack of scarlatina at twelve years of age which was followed by general dropsy. At the age of nineteen, the first left upper molar (the tooth about which she consulted me) was filled; this resulted in an alveolar abscess over the tooth. Ten years later she had another rather acute abscess in the same place, which was followed at once by a small abscess on the fourth toe of the right side; then small abscesses broke out over other parts of the body at the same time, the tooth being the seat of more or less uneasiness. Early in the spring of 1887, she suffered from an abscess in the right ear, which by the medical attendant was thought to be connected with some tooth. About a week previous to consulting me, she had a recurrence of the abscess over the left upper molar; this was followed by a small pimple on the back of the right forearm, which at the time of her visit presented the appearances of a small pyæmic abscess. Viewing the case as one of chronic pyæmia, having its origin in the suppuration about the roots of the molar, I decided to try and save the tooth, and in doing so, if possible, to cure the pyæmia.

The tooth I treated by removing all that remained of the dead and decomposed pulp, cleaning out the roots thoroughly syringing them first with weak carbolic lotion, then with absolute alcohol. The roots were finally dried with hot air and injected with a solution of iodoform in ether, and the filling of the tooth was completed at a subsequent sitting. There was a swelling, about the size of a small marble, on the gum over the buccal roots of the tooth, corresponding to the site of the alveolar abscess to which I have alluded; this I laid open freely, and allowed it to heal from the bottom. The fluid which escaped from this swelling was more like cystic fluid, such as is frequently found as the result of chronic inflammation round the roots of teeth, than true pus.

It is now more than six months since I treated this case, and being interested as to the result, I have kept the patient under observation. She has no further trouble with the tooth, and the metastatic abscesses have ceased. That the tooth was the source of the poison, to my mind appears extremely probable, both from the frequency with which the periodontal abscess was succeeded by an abscess elsewhere, and the fact that the small abscess, which was situated on the patient's fore arm when she came to me, subsided more rapidly than any previous abscess on treatment of the tooth; and no abscess has since then appeared.

I am not quite clear as to the explanation of why the pyæmia evidence itself always on the right side, while its dental origin was on the left. That more serious symptoms did not present themselves in this case was most likely due, as pointed out by Mr Watson Cheyne in his recent lectures on "Suppuration and Septic Diseases," to the small dose of the poison.

Monthly Summary.

BLIND ABSCESS.—DR. W. H. ATKINSON, IN N. Y. SOCIETY.—A blind abscess should be treated like blind people. Give them eyes; give them vent. Open them up to the disinfecting influences of the air and what else you please. Hew down into it and clear out the passages, and don't you forget it. Let all your mugwumpian ideas of filling go by the board. Be sure you are right and go straight to effect your purpose. What is disinfecting? What are antiseptics? We have heard a great deal about them. All the substances named are simply agents that holds oxygen with a loose grip, so they can carry it into the territory where the greater vacancy exists and leave it on the ground. That is the sesame of the whole thing—

this idea of holding the oxygen loosely and carrying it to the place in which it will do most good.

One thing that seems to haunt the minds of most of the speakers has not been clearly set forth—how to fill at root that is curved, the foramen of which is larger than the main canal. Our friend Dwinelle puts a hook up there, finds were the end of the root is, and takes a measure. I say measure so that you shall not go through the end, and then with a stiff wire bur, made a little shorter than the tooth, carry the material to place.

One thing more, and that is, do not be afraid of mischief coming about from microbes and those kind of things. Green apples give the boys the bellyache, and those disturbing elements, the microbes, they say, gave us the toothache. How much do we know about microbes? Do we know anything of their life history? Do we know anything of the results that will follow if we let them alone? Are they always poison, or do they sometimes do good? They say there must be microbes to make pus possible. Pus is dead blood. When the serum is killed it is not capable of being built into tissue. Suppose you have filled a tooth, and there comes a blind abscess, what have you got to do? Just cut right into the seat of the mischief, and let me say, gentlemen, if I never see you again, you had better cut fifty times when you do not need to, and then to forget to cut once when you do. When a pulp is dead you can cut through gum, alveolar wall and all, and be sure you are not doing mischief.—*Odontographic Journal.*

DESTROYING PULPS.—Dr. C. J. Tibbets recommends *arsenite of potassa* for destroying the vitality of tooth-pulp. The preparation is made as follows: take twelve grains of caustic potash, ten grains of arsenious acid, place in a mortar and add a few drops of water to assist in reducing the potash and arsenic to a thick, creamy paste, then add ten grains of sulphate of morphia (or muriate cocaine) and stir for fifteen or twenty minutes to prevent re-crystallization; keep in wide-mouthed bottles, well stopped with cork boiled in paraffine." In applying the paste the same precautions are to be used as with arsenic. The cavity is sealed with gutta-percha, incorporated with enough wax to render it non-plastic. The arsenite of potassa may be applied to the pulp of an aching tooth, it matters not how great the congestion may be, and in from three to twelve hours the pulp may be entirely removed. If the dressing be undisturbed for ten or twelve days, most frequently no remains of the pulp will be found save a soapy condition of the chamber and root canals, rendering the subsequent cleansing a very easy matter. No greater pain will follow the application than that which caused the visit.—*Chirurgical Dental Journal.*

SWAGING MACHINE.—Mr. L Matheson after experimenting with the Tauber Hydraulic Press says: The object of the invention is to supercede the ordinary zinc and lead casts and dies in the making of metal dentures, by the employment of hydraulic pressure, applied directly to the plate, resting upon a cast of Spense metal—a curious compound which it is possible to pour, whilst molten, into a Stent or gutta-percha impression, but which, when cool, is quite hard enough to bear a strain greater than zinc. Two claims are made for the machine. (1) That a great saving of time is effected by doing away with the necessity for the ordinary casts and dies; and (2) that a good fit is obtained with more ease and certainty than by the method now in use, owing the principle of the appliance, by which pressure is brought to bear equeally on all parts.—*British Journal of Dental Science.*

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At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

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The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

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Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

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Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

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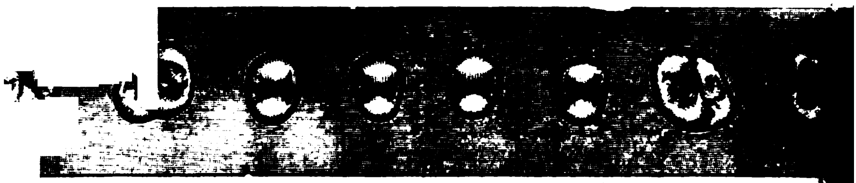

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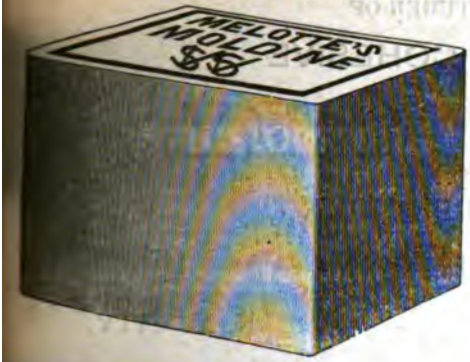

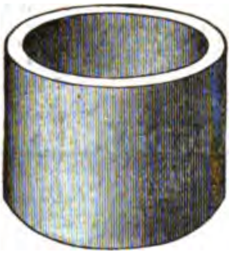

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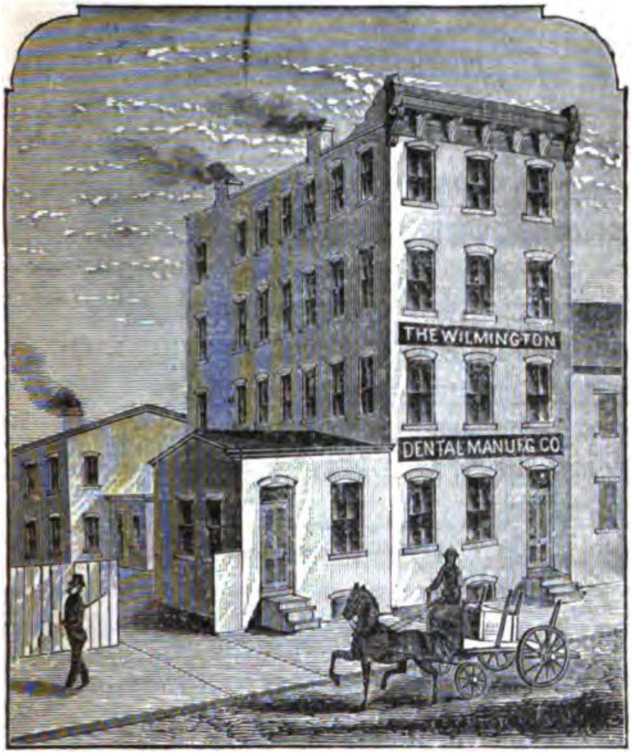

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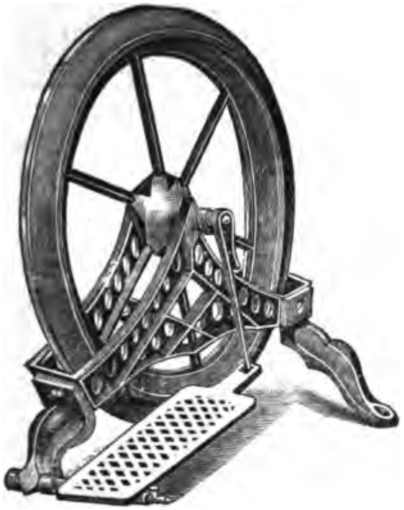
Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

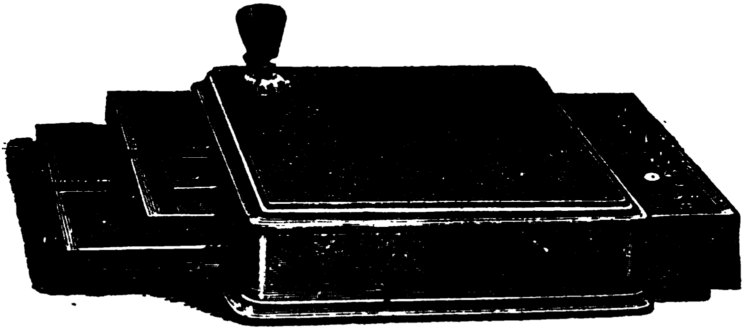
Price Boxed, - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

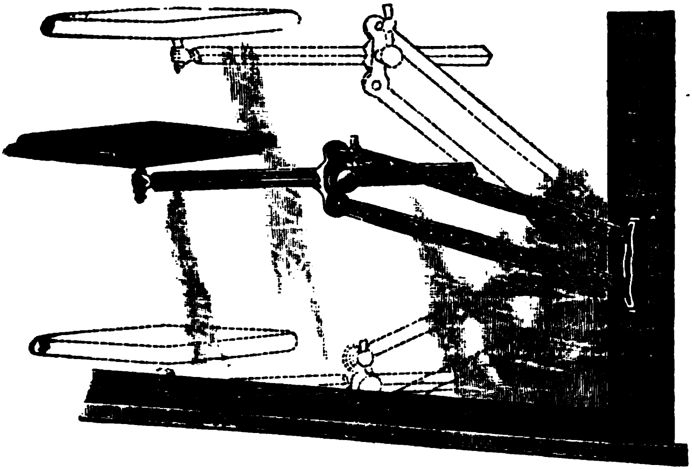
ALLAN TABLE.



VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES. $12.00

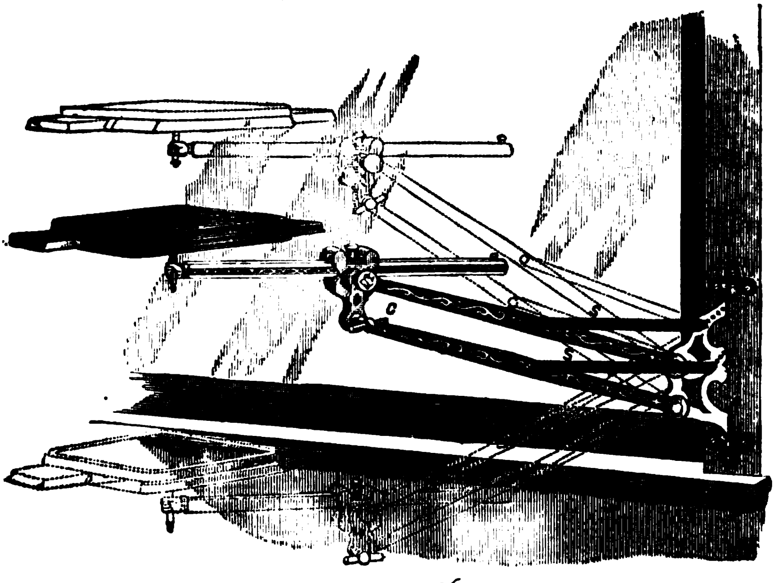
STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides In and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel Plated. Bar Slides between four rollers. C, the Clamp, can be reg- [illegible] on this Bracket.

orrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

ite's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

OLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

estern and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

---

eful Attention Given to the Smallest Order.

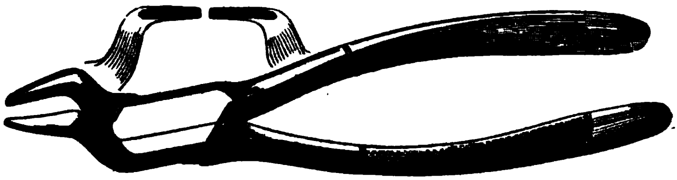
—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

erly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, - $2.00

ARTICULATORS

From - - - - - - $1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - - each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - - - $1.25

Hood & Reynold's 0, 1, 2, 3, per pound, - - - 1,25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - - $4.00

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce, - - - - $4.00

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - .50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - - $4.00

Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.

ntal Depot,

ESTABLISHED 1856.

OWDEN & COWMAN,

MANUFACTURERS OF

al Chairs, Lathes, &c.

AND DEALERS IN

ENTISTS' MATERIALS,

Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per oz.	½ oz.	¼ oz.	⅛ oz.
ons,	$32.00	$16.00	$8.00	$4.00
	30.00	15.00	7.50	4.00
s.	30.00	15.00	7.50	4.00
e's, ¼ Century,	30.00	15.00	7.50	4.00
Globe,	30.00	15.00	7.50	4.00
1000 Fine,	30.00	15.00	7.50	4.00
ams, Cylinders, A, " B, Rect. Pellets, Standard,	30.00	15.00	8.00	4.00
stal,	32.00	16.00	8.00	4.00
& Co.	29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,			5.60 per 1-5 oz.	
" "			2.90 per 1-10 oz.	

TIN FOIL.

—Nos. 4, 6, 8, and 10, - - 40 Cents per Book.

e's, - - - - - - - 30 " " "

Nos. 4, 6, 8 & 10, (extra tough) 40 " " "

SNOWDEN & COWMAN,
No. 9 West Fayette Street Baltimore.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE. - - - - -	15 Cts.	10 Cts.
For $15 00 net Cash, - - -	14 "	9½ "
" 25 00 " - - - - -	13 "	9 "
" 50 00 " - - -	12½ "	8½ "
" 100 00 " - - - -	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE, - - - - -	15 Cts.	10 Cts.
For $15 00 Cash, - - -	14 "	9½ "
" 25 00 " - - - - -	13 "	9 "
" 50 00 " - - - - -	12½ "	8½ "
" 100 00 " - - - - -	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per set of 14, - - - - - - - -	$ 1 00
" 11 " " - - - - - - - - -	10 00
" 29 " " - - - - - - - -	25 00
" 60 " " - - - - - - - - -	50 00
" 92 " " - - - - - - - -	75 00
" 125 " " - - - - - - - - -	100 00

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMORE.

GOLD & PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
old and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD
RESULTS USE THE
BEST MATERIAL.

THE
d and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼, ½ and
1 oz. p'k'gs. Each
package warranted
as represented.

THE
d and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED

—BY—

ago Dental Manufacturing Co.

CHICAGO.

For Sale by SNOWDEN & COWMAN

9 W. Fayette Street, Baltimore, Md.

AMALGAMS.

Townsend's	$2.00	per	ounce
Chicago Refining Co's	4.00	"	"
Caulk's Par-Excellent Alloy,	3.00	"	"
Standard Dental Alloy,	6.00	"	"
Lawrence's	3.00	"	"
Arrington's	2.50	"	"
King's,	3.00	"	"
Sterling Amalgam,	3.00	"	"
Chase's Alcohol-Tight,	3.00	"	"
Olivers Amalgam,	3.00	"	"
" White Amalgam,	5.00	"	"

CEMENTS.

Roman Cement, best in the market,		$1 00
Agate Cement, in 1 oz. Boxes,		2.00
" " " ½ "		1.50
Weston's Insoluble Cement, ½ oz.,		1.50
Dr. Flagg's Plastic Enamel,	per Pk'g,	2.00
Fossiline,	" "	2.00
Metcalf's Cement,	" "	2.00
H. D. Justis's Insoluble Cement,		
1 oz. Package, 1, 2, 3, 4 Colors,		3.00
½ " " any above "		1.50
H. D. Justis's Acme Cement,		
One oz. Package,		3.00
Half " "		1.50
Dr. T. B. Welch, & Son, Art. Dentine,	per Pk'ge	1.50
" C. N. Pierce Phos. Zinc,	" "	2.00
" T. O. Oliver's Oxy Phos,	" "	2.00
" Smith's " Chloride,	" "	1.00
Houghtons's Os-Artificial,	" "	1.00
Poulson's Mineral Plombe,	" "	2.50
Dawsons's Mineral Cement	" "	1.50
Caulks's Diamond "		
Per Package, 2 Colors,		1.50
" " 1 "		1 00
Caulk's Hydraulic Pebbles, large Pk'ge,		2.00

DENTAL RUBBER.

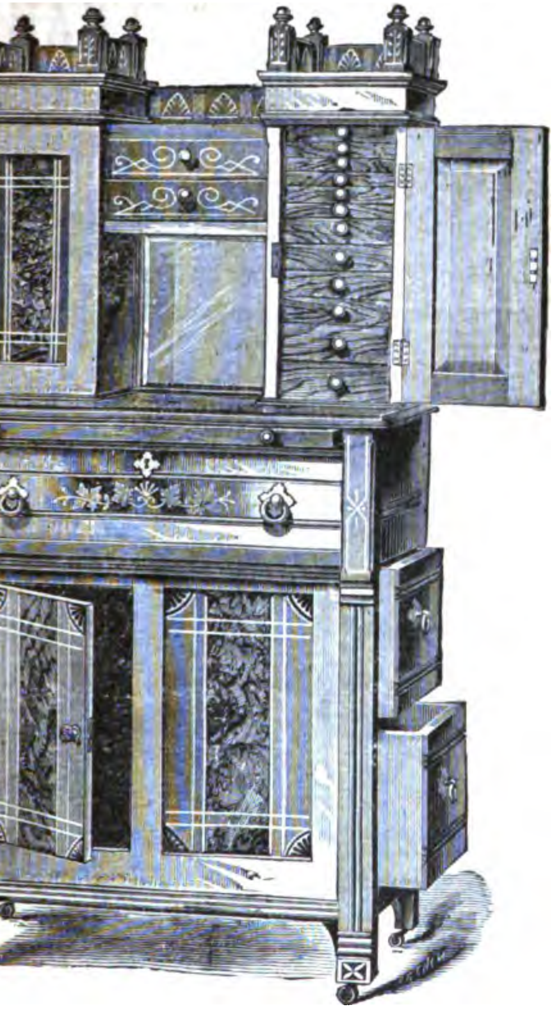
Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	"	2.25
Holdfast Rubber,	"	3.00
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Star Rubber,	"	3.50
Sam'l S. White's Bow Spring,	"	2.75
Whalebone Rubber,	"	3.00
Sterling Rubber,	"	3.00
Black Rubber	"	2.50

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$2 50
Sam'l S. White's	"	2.50

SNOWDEN & COWMAN.
9 West Fayette Street Baltimore

ved Cabinet Case No. 10.



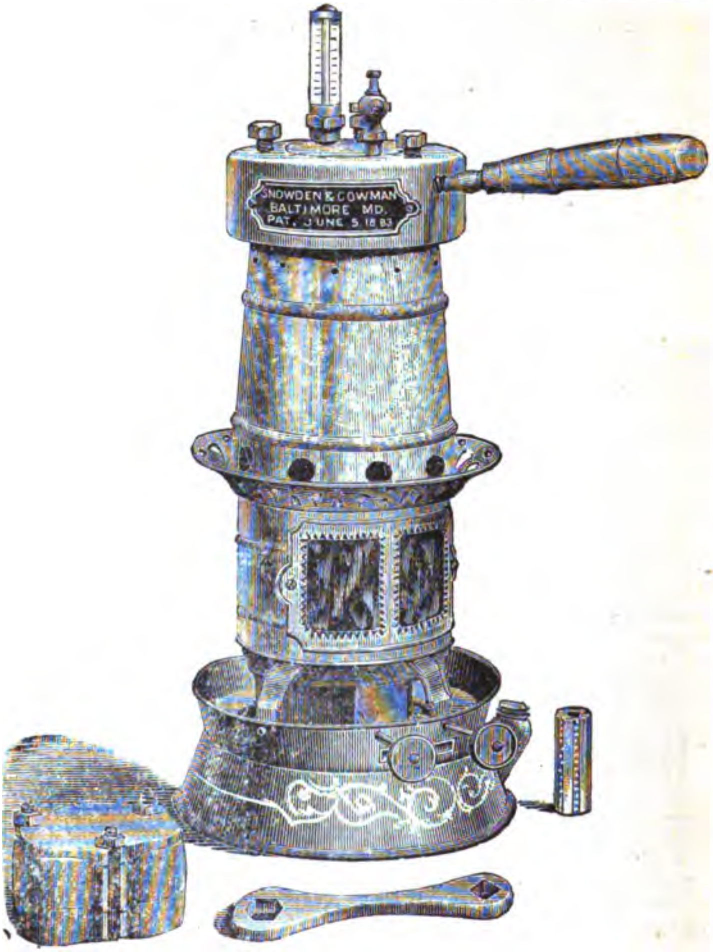
se is made of black walnut, hard oil finish. The panels are
d the mountings are all nickel plated. The total height is
idth 31 inches; depth 20 inches. The upper portion has 12
6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches
ses over all these drawers. On the opposite side is space
justable shelves for medicines. Connecting the two parts
ers, 10¾ x 12½, by 3 inches deep. Below these drawers is a
rror, 10 x 10. The lower portion contains one drawer in
ches deep, with slide drawer over it 25 x 16⅓ by ½ inches
elt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep.
, 20 x 16, 12 inches deep, with shelf.

with Wood Top (Boxing Free) - -	**$45.00.**
With Italian Marble Slab, (white) -	**50.00.**
" Knexville Marble, (pink) -	**50.00.**

nufactured by RANSOM & RANDOLPH, TOLEDO, OHIO.
Circle Street, INDIANAPOLIS, IND.

SNOWDEN & COWMAN'S

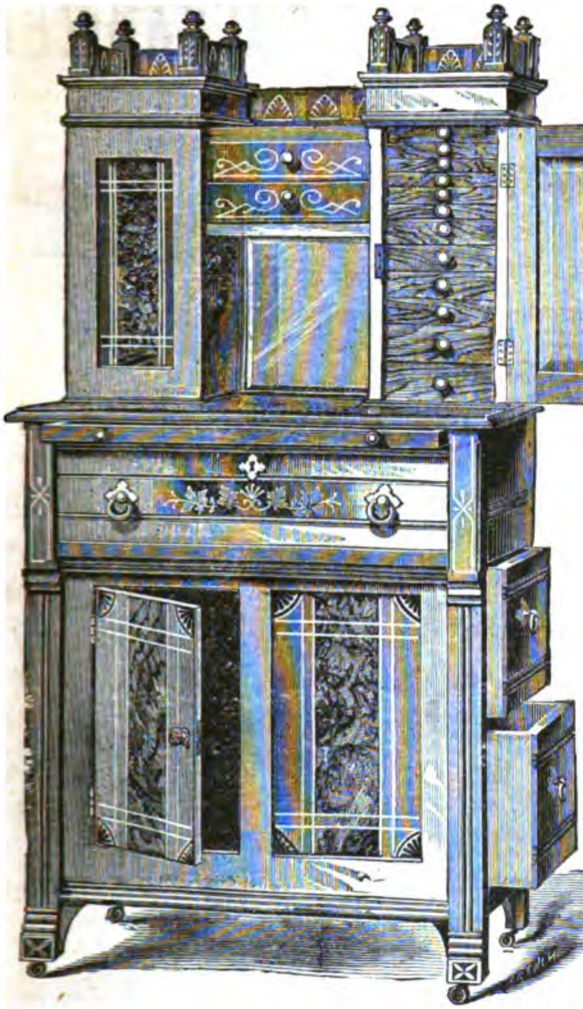
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer; and the mountings are all nickel plated. The total height is feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅛ by ½ inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

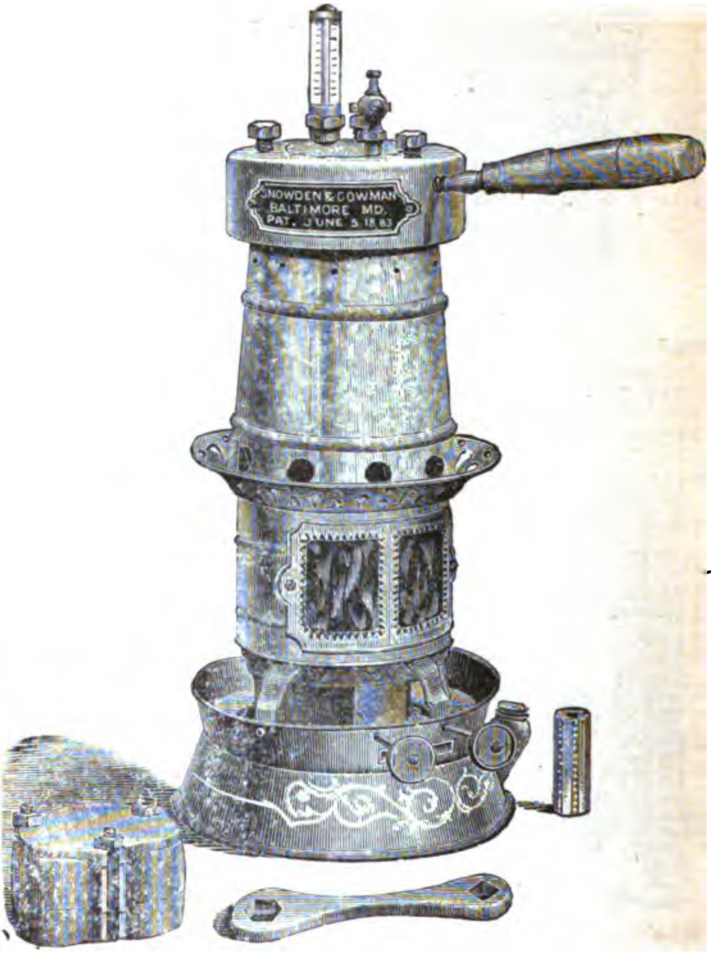
PRICE, with Wood Top (Boxing Free)	- -	**$45.00.**
" With Italian Marble Slab, (white)	-	**50.00.**
" " Knexville Marble, (pink)	-	**50.00.**

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

BRANCH: 29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right: and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—Howard W. Hoopes, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—Drs. Williams and Pennington.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. Duck, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—Thomas H. Davy, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—Bernhard Myer, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. Bierbower, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—Wm. B. Finney, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap [illegible] two marks on the cap and ring come opposite each other.

[illegible] rubber packing with powdered Soapstone before putting cap on.

[illegible] VALVE.—Always keep the lever upright in taking the Vulcanizer cover [illegible] on, and until the cold air is driven out of the boiler, then lower lever, [illegible] about mid-way so as it will not blow off steam at 320°.

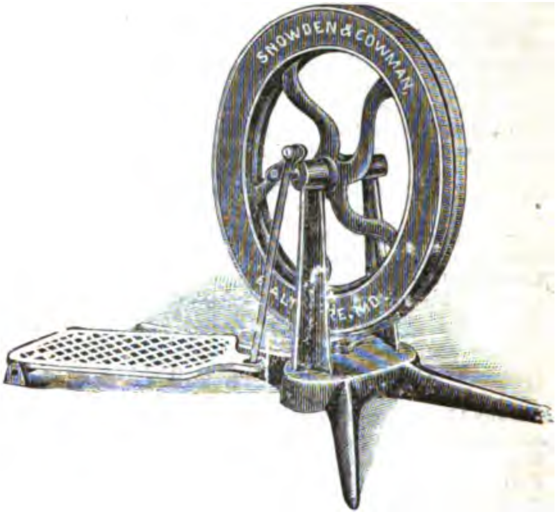
[illegible] STOVE.—Keep the oil reservoir well filled. Before lighting the [illegible] time allow it to stand about fifteen minutes, until the wicks are thor[illegible], trim them evenly and take a small clip off of the corner of each [illegible] top tank with cold water, and the stove is ready for use.

[illegible] must fill out the wick-tubes. Be careful to use the right size. Keep the [illegible], and the wicks, when not lit, turned down below the top of the tubes, [illegible] oil will not run down the outside of them. Keep the perforated tin clean [illegible] the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.

This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - $8.00

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

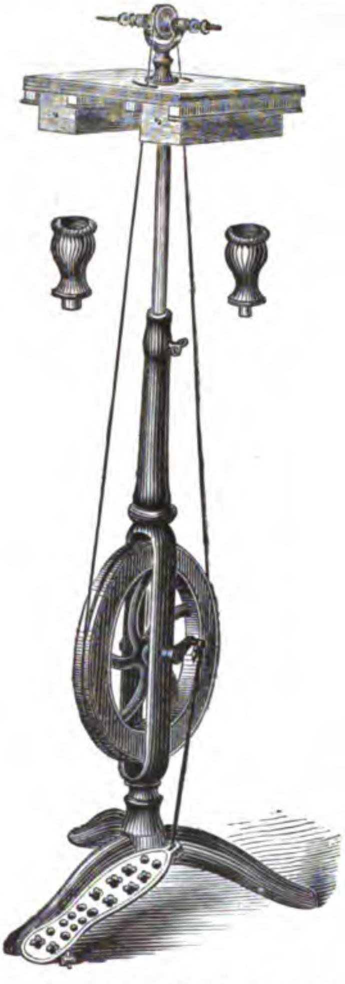
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - - -	15 00
" " Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel. No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, . -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 50
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS.

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

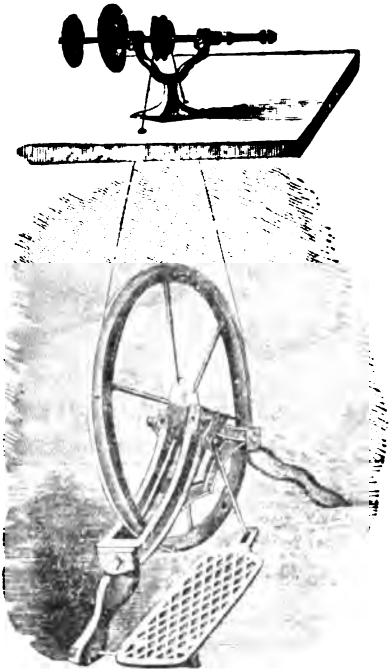
Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,

9 W. Fayette Street, Baltimore.

Diamond Fly Wheel and Lathe Head.



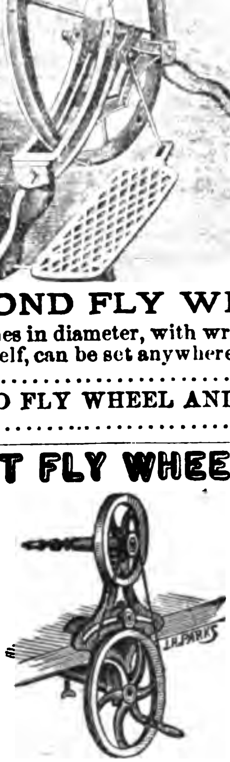
DIAMOND FLY WHEEL.

y-wheel is 18 inches in diameter, with wrought iron spokes, in an
ie, complete in itself, can be set anywhere and runs very steady.
RICE..$8 00

DIAMOND FLY WHEEL AND HEAD.

e, boxed.......................................PRICE $14 00

QUADRANT FLY WHEEL LATHE.



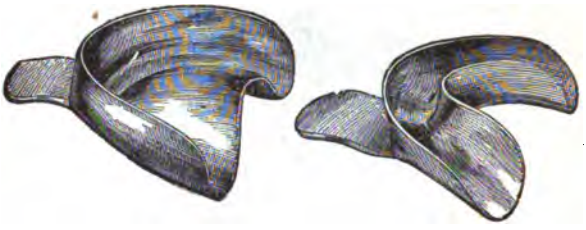
ans of the quadrant, the spindle can be raised from, or lowered to , and thrown from or nearer to the operator. The cord is tightened and the lathe is silent; the spindle is of the best quality of steel ss washers and two chucks complete. Weighs only four pounds.

RICE..$4 50

BRITANNIA IMPRESSION CUPS,

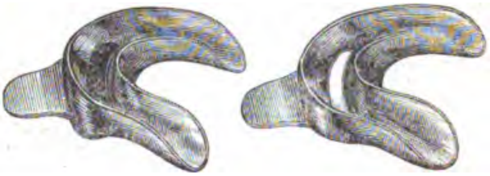
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



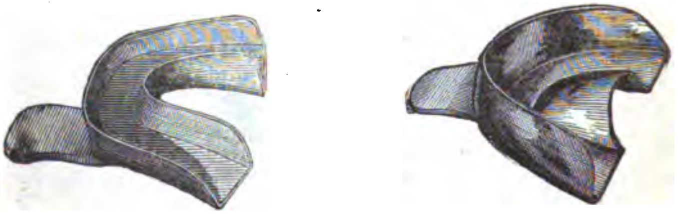
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each......................25cts.

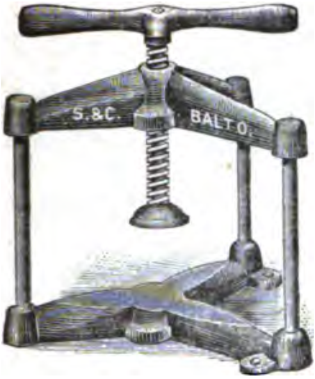
SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

WDEN & COWMAN'S

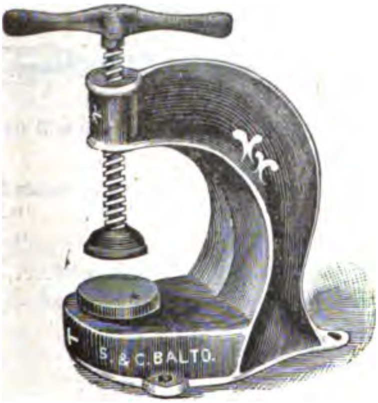
Flask Presses.

No. 1, Old Style Improved.



ss is intended to close the flask after packing with t is of great advantage, saving screws and flasks. t rods are of wrought iron and the handle of the be detached. They are *well made* and *very strong*, en made larger, so that it will take any Flask in the
Price, - - - - $1.50.

No. 2, New Style.



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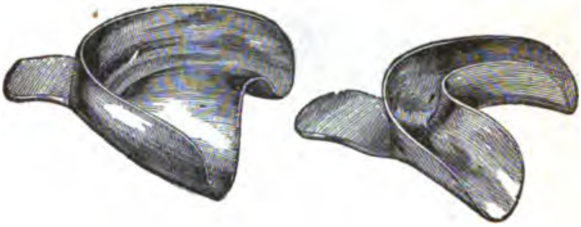

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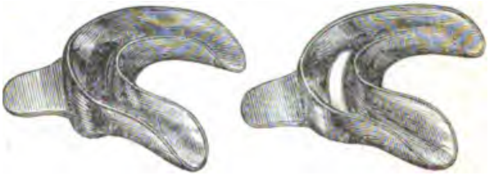

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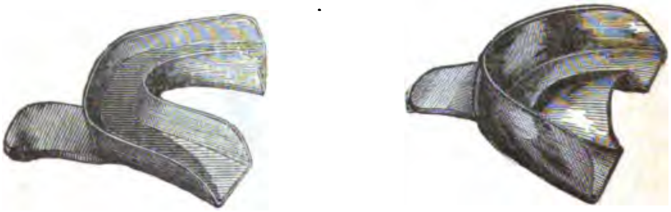

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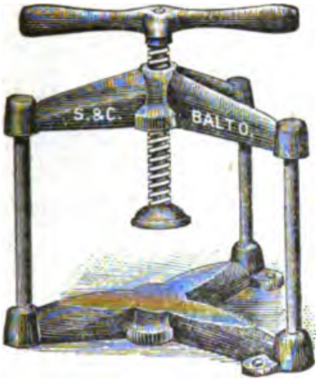

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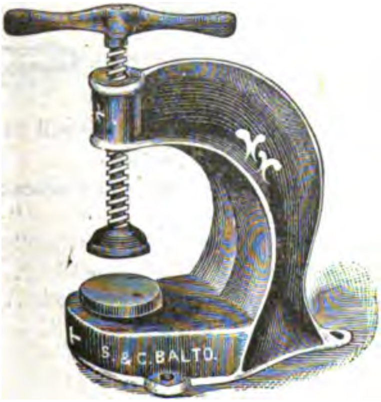

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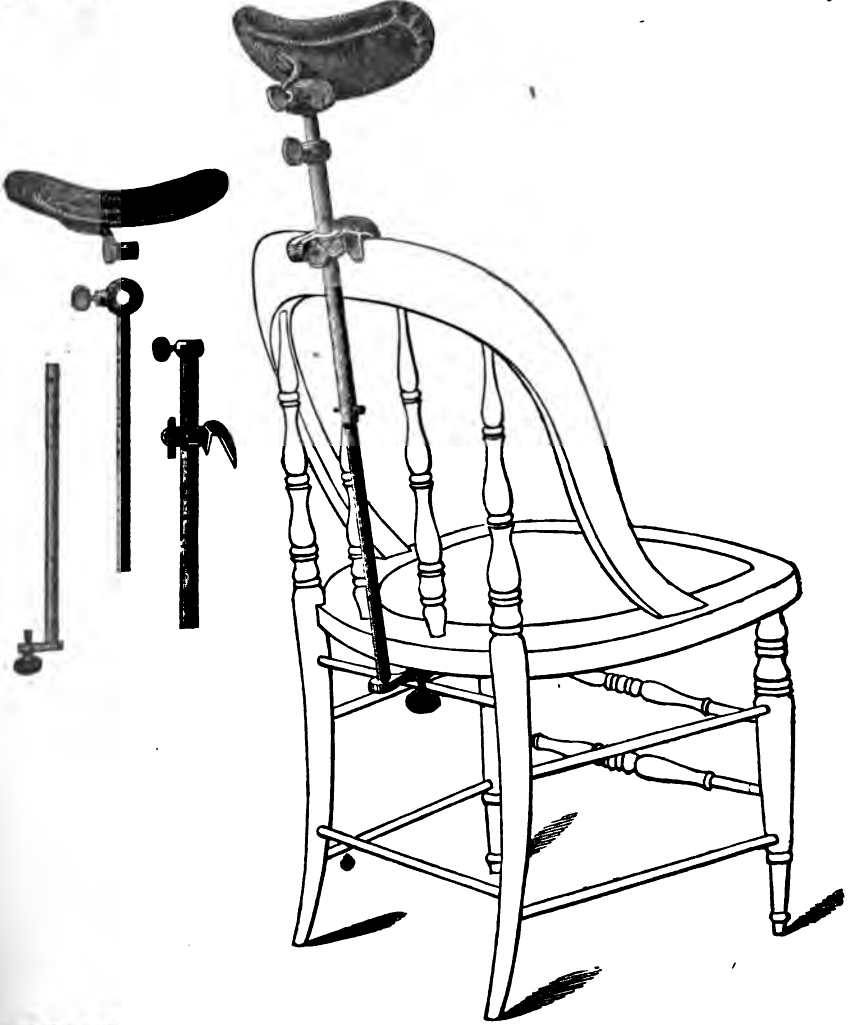

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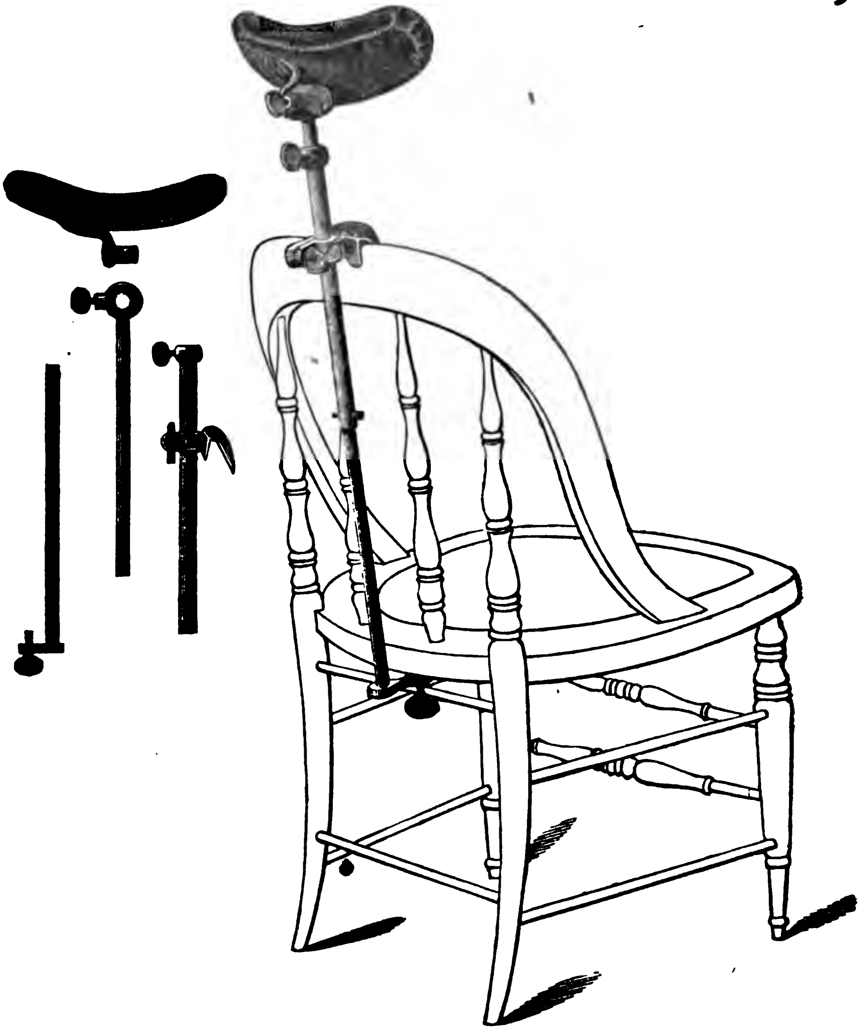

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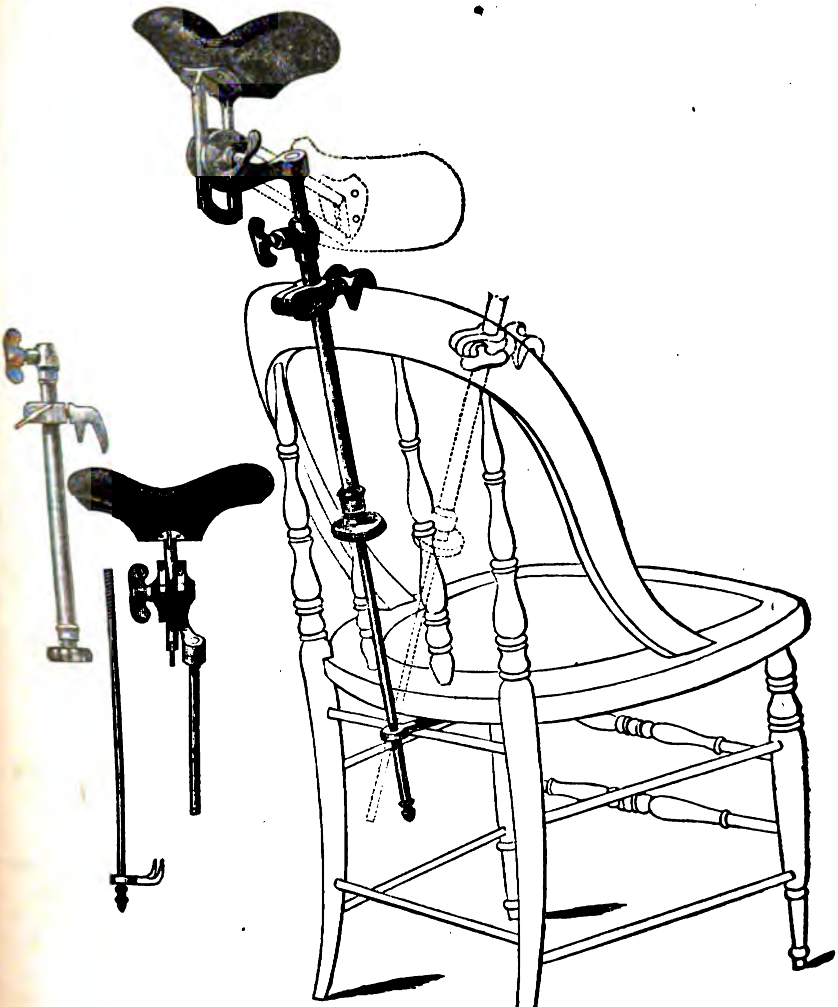

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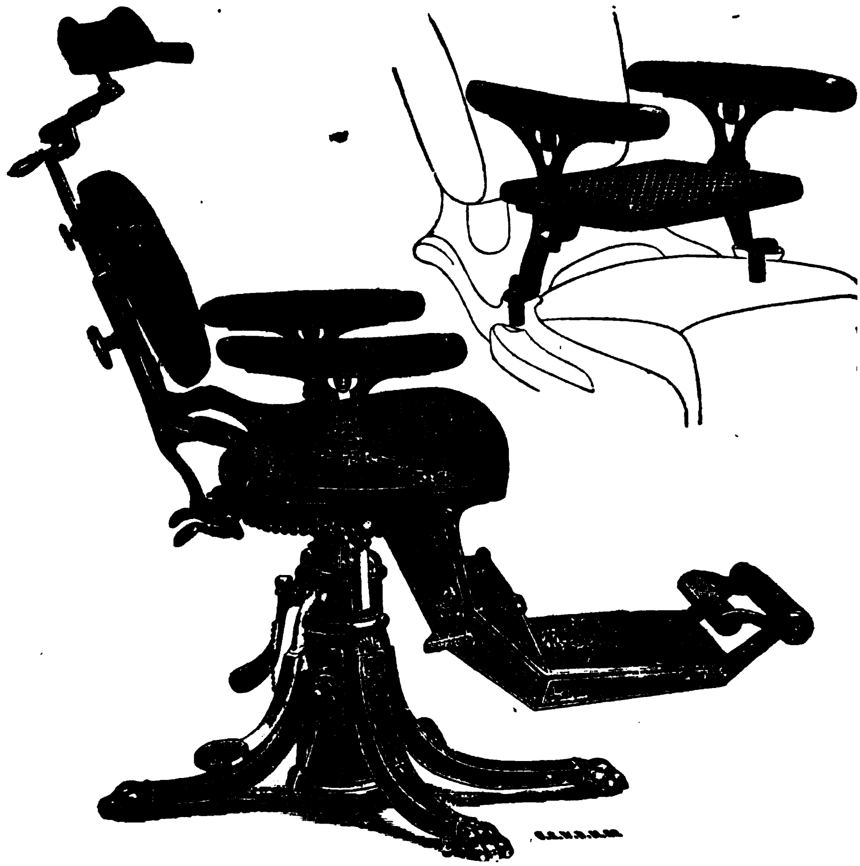

Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

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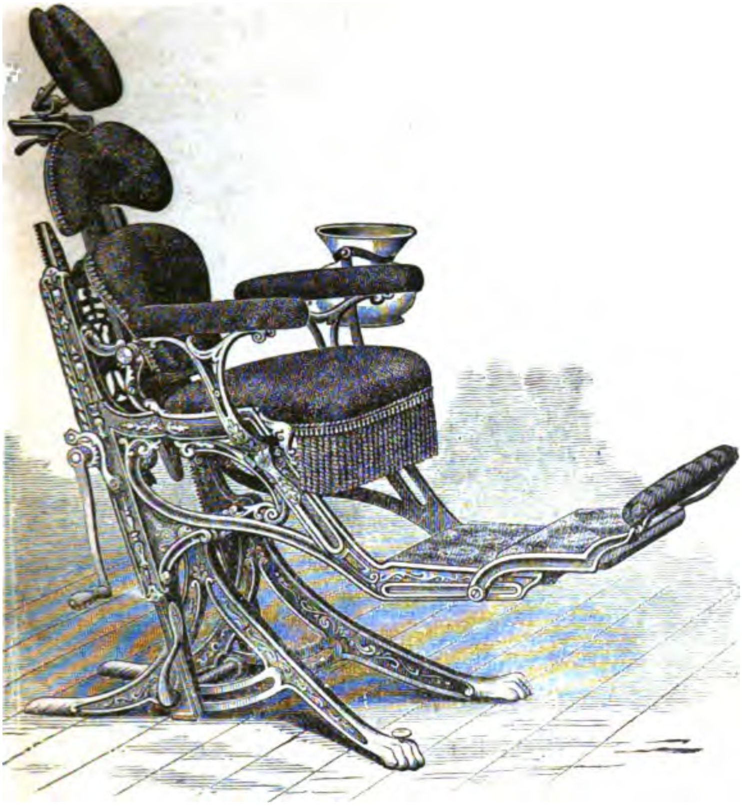

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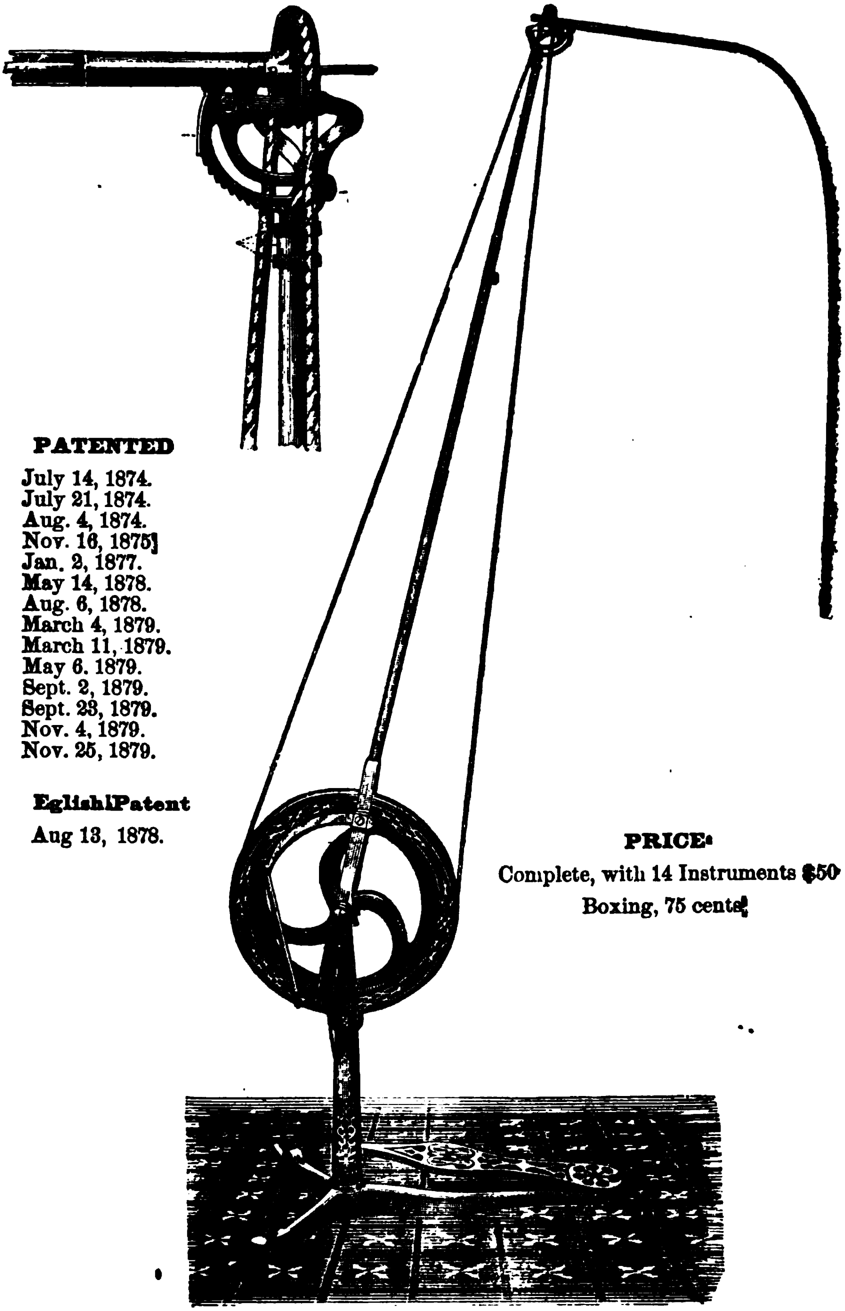

PATENTED

July 14, 1874.
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Nov. 16, 1875.
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May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
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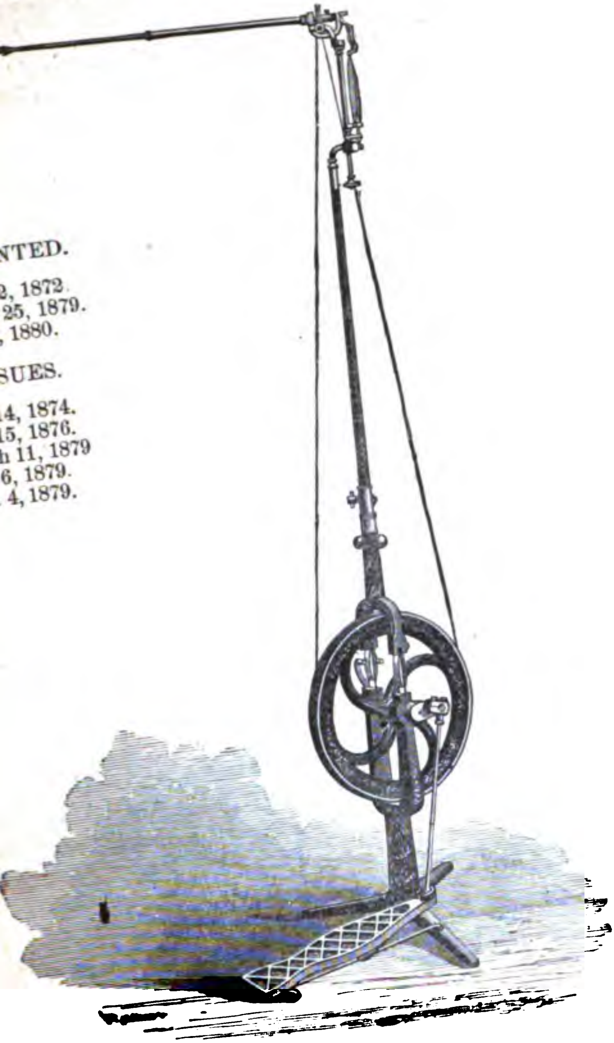

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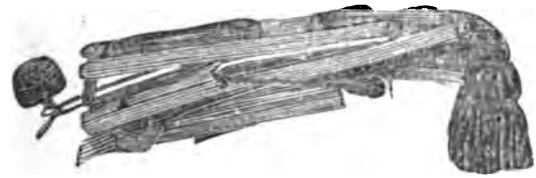

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AUGUST, 1888.

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EDITED BY

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VOL. XXII. THIRD SERIES—AUGUST, 1888. NO. 4.

ARTICLE I.

PROFESSIONAL PATENTS.

BY W. STORER HOW, D. D. S., PHILADELPHIA, PA.

[Read before the Mississippi Valley Dental Association at Cincinnati, Ohio, March, 7, 1888.]

The discussion of any subject is usually clarified by a definition of the title or terms by which it is designated. In the United States of America a patent is an official document which imports that the patentee is the legal owner of the property therein described, and the inventor is thereby legally constituted for a specified term of years the absolute owner of that property, subject indeed to any claimant who can prove himself to be the original and *first* inventor of the property aforesaid. Contingent upon this risk, or "bar," as it is termed, and the further personal bar of abandonment by neglecting to make application for a patent within two years from the public use of the invention, the right of an inventor to his patented property is the clearest and most unassailable right to property on earth, and is so maintain-able in law and equity through the highest courts of this country. It is therefore important to keep in mind these two fundamental facts: First; that a new and useful invention *originates* in the inventor; second, that the invention is *property*, the legal title to which is originally vested in the inventor.

The term dental patents is applied to such patents as relate to inventions connected with the *practice* of dentistry. It is important to notice that these inventions are not designed for the use of the laity, but are for use as improvements in practice by members of the dental profession, and now that dentists are formally included in the general designation of members of the medical profession, it is pertinent to our purpose to consider the subject of professional patents in general. The distinction just made is therefore of consequence as limiting the discussion to inventions intended for professional uses; leaving in abeyance without prejudice the subject of devices designed for use directly by the laity.

It has been commonly assumed by medical men that the primary purpose and function of a member of the medical profession should be the relief of such suffering, or diseased, or disabled members of the human family as should have need of and require his professional services. This assumption might have been permissible in part in the days when the priests were also physicians by the assumed right of a divine calling, and this, as well as many other subjects, is greatly befogged through such antique assumptions of authority, etc., by divine right. Modern thought and action are even now adverse to all such assumptions, and the primary principle is becoming recognized that every man is a king under God, and that no man has, or can rightly have, other than humanly delegated authority over his fellow-man. Government by consent of the governed, is the only just rule for the ruler and the ruled. Professional pretensions to peculiar privileges, practices and prerogatives by virtue of an assumed superiority of vocation, that places its laborers above any pecuniary compensation commensurate with the real value of their services, form the fundamental fallacies which underlie the delusions so prevalent in the minds of both professional men and laymen on the subject of professional patents. It is certainly not true that the professional services of the physician, or surgeon, or dentist are beyond price because they are preservative of human life; for so also are the services of the food-raiser, because food is essential to the preservation of human life,—*ergo*, food is of inestimable value! Now is it true of the doctor any more than of the farmer that he works without expectation of payment or hard cash for his work. Such assumptions are the veriest stuff and nonsense; for whenever and wherever men of any calling work for a living they work for pay,—honorable pay, if the work is honestly done. On the other hand, men who do not work for a living are either gratuitous laborers or lawless loafers, and to this latter class belong the whole group of pretenders from kings to beggars.

Gratuitous service of any kind, under any circumstances, implies the possession of superior abilities by the servant, and a corresponding inability on the part of the served, or, the willingness of the latter to receive service which he is himself able to perform. The inherent degradation of this last disposition it is difficult adequately to describe; and to this subtle debasement of the real manhood of man is owing the inability of the present generation to raise to the true nobility of manliness that must always, in all times and all places, refuse to receive something for nothing if one be able to make any return. Helplessness is, of course, a bar to all self-preservative action, and a man is then simply compelled to receive what is given. A work of love is always and only rewardable by love, and we are not unmindful of the Christian faith that works by love as the highest form of a divinely inspired activity. But the present considerations are based upon and strictly relative to the working fact that men are not yet generally doing business on pentecostal principles, and until the legal fences are all down and the debris cleared away,—the law having vacated its tutorship after bringing all men to Christ,—we should aim to do all things lawfully, with strict regard to all the rights of our neighbors.

Among these rights we have shown that patent rights are of the first order as initiating clear titles to property in inventions. We have also shown that when the inventor is a professional man his property may be of value to other professional men, who may buy it to aid them in their professional work. It has furthermore been seen that professional men properly and primarily work for a living,—*i. e.*, for money in return for services,—as it is eminently right and fit that they should do. The claim that professional services are essentially different from other services for pay is erroneous, as has likewise been shown.

A clear conclusion is, therefore, that the professional man has no more right to the free use of the patented property of his fellow-practitioner than to his other property,—as, for instance, his house, or his horse, or his case of instruments. He might in an emergency borrow anything that is his neighbor's, but to claim the right to use in the practice of his profession a professional invention, on the ground that individual professional property is, *per se*, common professional property, is, assuredly, an untenable proposition. Equally so is the commonly received doctrine that it is unprofessional to patent inventions designed for professional use.

To secure a copyright on a book which is designed for professional use is not now deemed unprofessional, as indeed it ought not to be; but will any right minded person pretend that copyright property is essentially different from patent-right property? They are certainly identical so far as they are original creations of inventive minds, and as such, when secured to the inventive authors by due process of law, are indubitably *property* in the highest and strongest and clearest titular significance of that term. It follows, therefore, that a book, an instrument, or an appliance originated and designed for use by a physician, surgeon, or dentist *professionally* may be copyrighted or patented by its inventor without in any manner or degree derogating from his standing as a professional man. The instrument, as well as the book, is intended to facilitate professional practice, and there is no valid reason why the professional inventor should *give* his invention to his fellow-practitioners any more than that the professional writer should send every fellow a copy of his book with the "compliments of the author." If the book is designed and adapted to promote professional practice, and so alleviate suffering and prolong life, then, on every premise and by every argument used in opposition to professional patents, the book belongs to the profession, and to copyright it or publish it for the personal profit of the author is,—well, all the delusive and deceitful and debasing drivel that has been poured out on inventors by copy-righting authors, and other inconsiderate or pecuniarily interested members of the medical profession. Possibly some introspection is necessary to disclose to many minds the motives which really actuate them when they raise such an outcry against professional patents. They want the best instrument or medicament obtainable, and they want such at the least cost, or without cost if possible. Success in practice depends upon their superiority of repute as professional men. Hence they want the best aids to practice within their reach; and if those aids are only to be had by paying a sum, a part of which goes into the pocket of an inventive fellow-practitioner, a part to the retail dealer, a part to the wholesale dealer, and a part to the manufacturer (or publisher,) then they have a grievance against the inventor, who, as a professional brother (?), ought to give away his part of the profits arising from the sale of his own original property! Why? Well,—because the invention enables the practitioner to do more for suffering humanity, and get more money from suffering humanity, than he could do or get without the invention! The inventor may get any amount of honor (?), but must get no cash for his invention, which belongs to everybody else because the inventor is a professional man; and in the professions, every brother practitioner has the right to take for his own professional use and profit anything which his brother has, or can invent, that is worth taking!

The notion that a professional man has gratuitously received his equipment, and therefore is in honor bound to give all he has and knows to his professional brethren, has no foundation in fact; for the office tuition, the copyrighted books, the college expenses, etc., at every point of his preliminary progress have cost him cash (or its equivalent), which in great measure went into the pockets of the most prominent professors, who are the loudest in professing the greatest concern for the protection of the profession from dishonor, by the patenting of professional inventions. The fact is patent that every medical or dental graduate has been called upon for cash in payment for the professional instruction he has received, and he in turn expects to receive cash for his outlay, just as any other business man expects a return for his investments in knowledge or the products of knowledge.

In the light of to-day, and in the United States of America, it is absurd to assume that the professions are other than departments of business, and distinguishable simply by name from the departments of agriculture, mechanics, merchantry, banking, etc. The other assumption, of the priceless value of medical knowledge as a ground of superiority over the priceless knowledge of the farmer, we have seen to be baseless.

An incidental demonstration of the fallacy of these assumptions has been wrought out in the practice of dentistry, which has by a process of synthesis started from the basis of a business, and by the application of business methods worked its way into the medical profession.

It seems capable of demonstration that the great advances made by modern dentistry in the United States are largely due to the patented inventions of dentists. The writer is free to admit that his own slight participation in this line of progress may unwittingly warp his judgment in this regard, but he is nevertheless firm in his conviction that the opinion is sustained by the facts. In this connection it appears proper to be still further personal in an allusion to the writer's later opportunities for becoming conversant with some correlative phases of the subject.

It is well known to members of this society that the writer was a practitioner of dentistry in this city for nearly thirty years,—less the interval of the war period. The last five years have been passed in Philadelphia, in professional connection with the principal dental manufacturing company of this country,—or, he may add, of the world. Opportunity has been thus afforded for the consideration of dental patents in many aspects unfamiliar to the ordinary practitioner; indeed, the services rendered by the writer have been frequently in the line of a patent expert for the determination of questions concerning inventions of that class. Under those circumstances, and under the present circumstances, when surrounded by old friends and neighbors, a freedom of expression is permissible that might otherwise be deemed inappropriate. Your essayist, therefore, feels at liberty to say that, in five years of confidential and intimate relationship with the heads of the great manufacturing house referred to, he has seen in the conduct of their business not only nothing to condemn, but contrariwise, the most commendable consideration of the interests of dentists, dealers in dental goods, clerks, salesmen, workmen, workwomen and employees of every kind; combined with a general business conduct based upon the highest principles of commercial honor and probity. There need be no hesitation in the use of superlatives when speaking of the sterling qualities of the men who control this great concern. They reflect honor upon the profession which they

—following in the footsteps of the revered founder of the house which bears his name—have sedulously sought to promote, and have been largely instrumental in advancing to its present proud position among the noble and learned professions. Doubtless it is due to the writer's experience in the service of this company that he has reached the firm conclusion that honorable motives and conduct are not confined within the limits of the so-called honorable profession, but that the merchants, the mechanics, and the workmen of every class and degree are honorable, and to be honored whenever and wherever they acquit themselves like true and faithful men.

It is furthermore to be said that the president of the White house, as editor of the *Dental Cosmos*, has rendered inestimable service to dentists and the dental profession during his connection with and conduct of that journal from its beginning, thirty years ago. What is implied in the personal supervision of three hundred and sixty monthly issues of a journal whose every page was to be and has been resolutely kept free of matter not related to dentistry, nor expressed in good, clean English, no one can know but the inflexibly faithful and thoroughly competent editor. What the profession and the world knows is that the *Dental Cosmos* is an honor to dentistry, to journalism, and to the professional business men who have made and kept it foremost and highest.

The elevating nature of dental patents was primarily recognized by this house, and large sums were spent in acquiring and developing them. Few persons are aware of the rapidity with which inventions have followed one another under the stimulus of a reasonable expectation of reward for such extraordinary exercise of thought and skill. Yet fewer persons know what a costly thing it is for the manufacturer to change or discard devices which, when just ready for the market, become improved, or superseded, so that the new stock is rendered comparatively valueless. Just at this point the nerve, and sagacity, and determinatio of this company to put forth the *very best* goods, that could be made, have time after time been made manifest, and thousands of dollars' worth of superseded things have been destroyed, or shelved without the slightest hesitation, or attempt to realize by holding back the new until the old have been sold. The "monopoly" against which such thoughtless outcries have been made is of untold benefit to dentists because both able and willing to discard the old good things immediately upon the advent of the new and better ones. So, too, have the foremost dentists always done, and that is the secret of success,—the best, at whatever cost. That is also at once the inspiration and hope of the inventor.

To summarize our conclusions, it may be confidently declared that:

First.—An original and first inventor has *absolutely produced* the *property* to which he is entitled by his patent.

Second.—It is strictly right, equitable, ethical, just and proper for an inventor who is either a clergyman, lawyer, physician, surgeon, dentist, chemist, author, composer, or worker in any of the departments of business termed professions, to patent his invention, whatever its object, if, and if only, it be useful to such of his fellowmen as may properly desire to use it lawfully.

Third.—The outcry against professional men who do, or countenance those who do, obtain patents for human life-saving or life-promoting inventions comes in every instance from men who either do not understand the subject, or are directly or remotely interested in obtaining the use of the invention gratuitously, or without due process of law.

As products of thought, the movable types, the cotton gin, the steam engine, and the electro-magnetic telegraph have been directly and indirectly instrumental in saving and promoting li[illegible] far greater degree than all the [illegible] he contemporaneous physic[illegible] them with exclusive rights and privileges as a means of making money; yet these same professional diplomatists would proscribe a fellow-prescriber if he were to obtain a Patent Office diploma as the originator of a life-saving invention.

If, therefore, common sense, reason, argument, logic, demonstration, humanity, beneficence, lawfulness and righteousness are not all on the side of the professional inventor and patentee, then his case only needs restatement in embossed letters that may enable the wilfully blind to mentally see the affirmative facts that are indubitably clear to the mind of an unprejudiced investigator. The great number of persons to whom such an invention should prove a priceless possession might be a stimulus to productive ingenuity, were it not for the amazing probability that nearly every one of them would bring forward either his professional brotherhood or his great need of the professional equipment as an unanswerable plea for the gratuitous bestowment of the property upon himself; the *honor* of being the inventor of so useful a device sufficing (of course) as an ample reward for the inventor in lieu of the filthy lucre fees which would be what the practicing professor would obtain from its use.

The phrase "cmpty honors" is certainly a significant one, and must have been devised for a professional inventor, because he, of all other men, would have been, as in modern times, sure to have received neither cash nor substantial gratitude, however valuable his invention might have proved to his fee-earning brethren. History is full of examples uniformly tending to show that, if the inventor could not *compel* the recognition of his property rights in his invention, he has not only been denied compensation, but has often suffered persecution, and even martyrdom.

In these later years, when every other department of practical knowledge and labor is making such progress by means of patented inventions that the Old world stands amazed and almost awe struck at sight of the marvels wrought in the New, is it not time for the old professions to fall into line with the new, and declare that henceforward every incentive shall be held out to the ingenious and skillful professional man to invent or discover human life-saving and health-promoting means and devices, with the assurance that his patent rights shall be respected, and due honors be paid with the cash for the privilege of professionally using his invention?

Will it not be an ascent to a higher plane of thought and action for "doctors" (teachers) to teach that professional honor is not a cloudy abstraction, nor a clannish distinction, nor an exclusive assumption; and that, in particular, a doctor of medicine or surgery is a person called to and trained in the professional business of the readjustment and repair of disordered human bodies for a cash consideration, due and to be paid upon the completion of the service?

If it be objected that this view degrades the practice of a profession to the merely mercantile prosecution of a business, it is at once to be said that the objector begs the question by the false assumption that a business is beneath a profession, whereas an honest business honorably conducted puts the business man above beggary of every kind. He never begs, but buys and sells with the most scrupulous regard to the property rights of everybody; and, to his great credit, it is to be said that there is among men no higher working standard of honor than that of the business man whose simple statement or working formula is "I will sell this to-day for so much," and when his fellow-merchant at hand, or a thousand miles away, replies, "I will take it at your price," that practically completes the transaction, and the property will be transferred, although only their words of honor will have passed between them, and although, also, prior to the transfer of the property in fact, its value should change to the amount of many thousands of dollars; the business man's word is actually as good as his bond.

There is, therefore, relevancy to the subject under consideration in the writer's illustrative allusion to the well-known business house in which he has learned many instructive things concerning the correlations of professional honor with business honor, and as common rules of practice, the terms appear to him to be not as yet synonymous.

As a matter of fact, it is proper to state here that, aside from the young lady type-writer, no person either nearly or remotely connected with the business house referred to is aware of even the intention of the author to write or read a paper upon this subject; and, therefore, the responsibility for the views and sentiments herein presented rests entirely and exclusively upon him.

As supplemental to the fôregoing paper, the author adds to this publication of it on his own account, for personal distribution, the following extract, in order that the reader may verify the irrefutable fact that the exclusive copyright and the exclusive patent right are fundamentally identical in their establishment under the law which was intended "To promote,"—and has to a marvelous degree practically promoted,—"the progress of science and useful arts."

So far as the author is aware, the copyright and the patent right are the only instances of the constitutional creation of property in materialized or embodied thought.

Article I, Section 8, in the Constitution of the United States declares: "The Congress shall have power" . . . "8. To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Also, "18. To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this constitution in the government of the United States, or in any department or officer thereof.

ARTICLE II.

THE MANAGEMENT OF PULPLESS TEETH FROM THE STANDPOINT OF DAILY PRACTICE.

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

It is with no small degree of trepidation that I venture to present to you a few observations on the management of pulpless teeth, in face of the fact of recent contributions to our Society's proceedings and the current periodical literature of the time. However, I hope that the subject itself has enough of interest in it to receive and merit your most thoughtful consideration. In the effort to conserve teeth in the mouth for mastication and articulate speech, the retention of roots for the support of pivot teeth and crowns, and the growing tendency to resort to bridges of the fixed and removable kind, dental surgeons everywhere are devoting much of their thought, ingenuity, and energy in the direction of retaining within the mouth many pulpless teeth, we had presented to us various operative procedures designated by their authors as mechanical methods; others have been urged for adoption as the immediate dressing and filling method, and still others comprising what is known as the lime-dressing or therapeutic expectant method. From the variety of systems proposed in the management of pulpless teeth the student or inexperienced surgeon would hardly be able to choose a safe path in which to tread unless they were directed by a strong hand. Pulpless teeth are found in the mouths of the old, the middle aged, and the young; even the teeth of the first dentition do not escape the ravages of caries, and slow death of the pulp, or its destruction by other means, is not infrequent. Pulpless deciduous teeth and roots may very properly be retained for mastication up to or about the

time of the expected eruption of their successors. At t
point, however, I will omit their further consideration.

For convenience of treating the subject of the mana
ment of pulpless teeth, we will classify them under seve
headings as follows:

First. Teeth deprived of pulps by means of corros
medicaments, or immediate operative procedures—caute
broaches, wooden points, anæsthesia, or accident.

Second. Death of the pulp as a result of capping
filling, from rapid thermal changes.

Third. Death from partial luxation, as from a bl
or fall, or, from torsion in correcting irregularities, or fr
imperfect or partial extractions and replacement of teeth

Fourth. Death from gradual exposure by caries,
some form of abrasion or erosion.

Fifth. Death from exposure of the pulp throu
salivary deposits, exposing the apices of roots by displa
ment of tissues, or from the development of pockets res
ing from the so-called Riggs' disease and their extension
or around the apices of roots.

Sixth. Death from irritation by pulp-nodules
strangulation, and from unknown causes.

From this classification, imperfect as it is, you w
readily agree with me that no single method of operati
surgical or therapeutic treatment, will suffice to meet
indications in the treatment of irritations, inflammation,
abscess. From a somewhat extended experience in t
conservation of pulpless teeth of all classes, covering
period of nearly twenty years, in one city, with few bi
of passage as clients, my records now show, not hundre
but thousands of teeth treated and the roots filled, with f
recurrences of abscesses or open fistulæ.

My method of procedure is as follows for Class One
In the management of this class of pulpless teeth there are
three things that I invariably insist upon and carry ou
faithfully. First, complete disinfection; nothing is allowe
to enter the pulp chamber or canals that is not placed ther

hands, by means of clean and sterilized instru er and saliva are rigidly excluded. Second, no oagulators of albumen are introduced into the ber or canals prior to the removal of the pulp. root filling material must be innocuous, tabooing ration of antiseptics or disinfectants as a com- the filling material. If I have destroyed the y of the methods above spoken of, immediate under a local or other anæsthetic, by the cautery, int (a barbarous method), or if it is in a recently oth, I assist the cessation of hemorrhage, then ringe the pulp chamber and canals with equal roxide of hydrogen and a one-thousandth solu- chloride of mercury until they are free from l serum. The root is then desiccated with cohol and heated air, and filled at once. If I yed the pulp with arsenic or other corrosive, at wo days or therabouts the corrosive is removed eptic precautions, keeping the tooth and cavity dressing of tannin and glycerine is applied to zed pulp, first puncturing it to allow the con- d to escape. This dressing is covered with a, through which two or three perforations are a pointed instrument to allow any confined air This is allowed to remain eight days, when the removed. The rubber-dam is adjusted over the the pulp is extirpated with suitable sterilized It will be found healthy and much reduced in treatment. The pulp chamber and canal or o be washed and swabbed with the peroxide de solution above mentioned, the root desic- illed at once. The roots are not reamed or access is obtained by freely opening the pulp

wo. In the management of this class of pulp- generally find little trouble in diagnosis from ce of three conditions, one of which is always present, *i. e.*, encystment of the apex; a dormant or cold abscess; or a fistulous tract leading from the end of the root externally or occasional lifting the peridental membrane from the root, and pus found escaping at gingival margin.

Encystment.—This may be suspected if the tooth has been free from tenderness in mastication, or when it is unaffected by thermal change, and the canals are dry when opened into for the first time. Absence of odor is also to be noted. Treatment: disinfectant dressing and immediate root filling.

Cold or dormant Abscess.—The rubber-dam being adjusted and the tooth and drill bathed in terebene or terpinol, the pulp chamber is entered. The contents of the chamber and canal are at once bathed with a penetrating disinfectant, which is allowed to remain for a few minutes. The debris is removed and the pus or watery exudation is drained through the canal. The peroxide and bichloride solution aforementioned is then injected or pumped into the territory beyond the apex of the root until it will come out clean; the roots are not drilled or reamed unless they are carious. A slender strand of cotton wool, saturated with terpinol or other essential oils, is packed in the root, not very lightly, and the pulp chamber filled with dry cotton, over which is packed some soft gutta-percha. This is perforated to allow air or any mephitic gases to escape. The patient is dismissed for ten days. On his reappearance the dressing is removed, the tooth being left dry. In most cases it will be found that the cold abscess has disappeared; this is determined by the absence of pus or moisture, and freedom from tenderness on percussion of the tooth. Should moisture exude into the canal the treatment must be repeated. The secret of the value of a root-dressing composed of one or more essential oils is this: At a temperature a little less than 95° F. camphors are slowly but certainly deposited from the oils, and vaporized almost immediately, so that the recently cleansed surface of a dormant abscess is stimulated to reproduce tissue which will replace that already dissipated by the distension of the peridental membrane and the formation of an abscess. These camphors are non-irritant disinfectants.

To introduce a powerful escharotic or coagulator of albumen in the treatment of a cold abscess not providing for drainage, would be most disastrous, and would generally lead to the formation of an acute abscess. It were far better practice to cut through the gum and alveolar process and provide an outlet at once than to attempt such a practice. The accidental forcing through the apex of a root, of any septic matter, is always to be avoided, and even the greatest care exercised by the immediate and indiscriminate root-fillers is not sufficient to prevent much suffering, and the occasional loss of a valuable tooth from inadequate disinfection. Time is always a factor in the destruction of microbes and their spores, and the disinfection of infective dentine is a matter of no small importance when it is hoped, by filling a root, that the operation will prove permanently successful. The future welfare of the cementum and pericementum is largely dependent on complete disinfection of the dentine prior to root-filling. The practice of leaving antiseptics and disinfectants within the root canal or pulp chamber as a safeguard against future trouble is delusive and is not founded on a knowledge of their potency in such situations

Fistulæ.—When a fistulous tract leads from the apex of a root to the gum or elsewhere, cleansing the canal of debris, disinfection of the dentine, and injection or pumping through the canal and fistula of eugenol, terebene, or five per cent, carbolic acid, and immediate root-filling, is generally permissable. When there are complications of caries or necrosis of the alveolar plate, surgical interference is required. In some cases of cold abscess, and more frequently when there is an open fistula, small blackish nodular deposits may be found around the apices of the affected roots, which it is needless to observe should be removed before the abscess will heal.

Class Three. Treatment: the same as for Class Two.

Class Four. In very many cases of pulpless teeth, from gradual exposure and death of the pulp, we find either encystment or cold abscess; more frequently the latter. This has already been sufficiently described in detail. When the pulp dies from mechanical abrasion or some form of erosion, we have been surprised to find that in nearly every instance the apices of the roots have been encysted, and such teeth in consequence are fit subjects for immediate root-filling when thoroughly disinfected.

Class Five. In the treatment of this class of pulpless teeth, when it is thought desirable to retain them in the mouth I have found that immediate root-filling is not to be practiced with impunity. The peridental membrane, remaining on the cementum, detached, or with only a loose hold upon it, is so feebly vital that the most careful stimulation and the retention of temporary dressing in the canals until the fistulæ have healed from the bottom outwards is most productive of good results. My usual practice is to remove debris and the pulp, cleansing the canals, as in Class One, then pack the roots tightly with threads of cotton wool, saturated with

Ol. Cinnamon - - - - - m. xx,
Ol. Gaultheria, Terebene, - aa m. xxx,

and seal the crown cavity with hard gutta-percha. This dressing is generally allowed to remain from one to six months when the root is filled permanently.

Class Six. In the management of this class of cases circumstances generally point to the necessity for temporary root dressings in order to prevent pain and swelling on the face. Whenever any uncertainty exists in the mind of the operator about the possible outcome of the hasty filling of a root, the interest of your client and second judgment will dictate the course to pursue, which may, and probably will be, the temporary dressing with a perforated gutta-percha covering. In the consideration of the various classes of pulpless teeth as they are met with in daily practice, I am not unmindful of possible complications; very many cases, indeed, are not seen by the surgeon until pain has driven the patient to him for aid. Certain relief is always afforded by drilling directly into the pulp chamber, supporting the tooth with the fingers, or producing torsion with a ligature held in the hand of an assistant. This operation is always to be preferred to drilling through the process, unless the patient has great fortitude, it is convenient to apply a local anæsthetic. If the swelling is great and the abscess can be reached conveniently with a bistoury, that operation will be indicated. After entering the pulp chamber, and gently removing the remains of the pulp, under antiseptic precautions, very great comfort may be assured the patient by painting the dried gum with equal parts of chloroform, tincture of aconite root, and tincture of iodine, and the immediate administration of 1-10 gr. pills of calcium sulphide every fifteen minutes until four or six have been taken, or thirty drop doses in water of fluid extract of Tonga every fifteen minutes. The drill hole should be stopped very loosely with iodoform cotton or cotton moistened with an essential oil, for two days, when all soreness will have disappeared and the root may be cleansed and dressed as mentioned in the consideration of Class Two, under the sub-healing of cold abscess. Occasionally pulpless teeth are elongated, and when the jaws are closed, pain is produced. This can be obviated by grinding the points or cusps of the molars and bicuspids, or other occluding surfaces.

I have no desire to lengthen this already long paper, but may I be permitted to observe that much of the success in the management of pulpless teeth is due to the thorough removal of all pulp tissue and other foreign matters, and the fidelity of filling the roots with a substance not porous or corruptible by the fluids of the mouth, or the products of microbes, and free from intermixed antiseptics? No dependence is to be placed in the permanency of incorporated antiseptics in root-fillings. I believe it to be a mistaken idea that only the apex is to be sealed, and would regard it as a step in advance, if all surgeons would abandon the stopping of roots with cotton, wool, silk or other vegetable fibre saturated with antiseptics, and adopt either an incorruptible oxychloride, oxyphosphate or gutta-percha as a root-filling. All care and skill exercised in the disinfection of dentine, and the treatment of abscesses goes for nought after the lapse of a few years, when reliance is placed on makeshifts of root-filling materials. Unless the root of a tooth is thoroughly well stopped by the filling, discoloration is not the least disfigurement of the anterior teeth, to say nothing of chronic peridental inflammation and the establishment of fistulæ and the recurrence of previously cured abscesses, with all the attendant evils and much suffering to the patient.—*British Journal.*

ARTICLE III.

BICHLORIDE OF MERCURY IN DENTAL PRACTICE.

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

(Read before the Southern Illinois Dental Society. April, 1888.)

The dividing line which is supposed to have existed between the animal and vegetable kingdoms is being rapidly obliterated, indeed it is now almost beyond question that there is not sufficient difference to justify any division into separate kingdoms. As in our observations we descend to the lower class of animals and plants, some of each are reached which have so few and slightly distinguishing features that they may be classified with either animals or plants, without in any marked degree violating the laws governing either species. To this vast class multitudes of minute living beings belong. The air and water is filled and peopled with them. In the lowest species of plants we find the various disease germs and spores, which have been erroneously designated as animalcules, but are now properly known to be plants. The closer knowledge we now have of the life and habits of these germs has entirely revolutionized medical science and practice. Diseases whose origin has thus been discovered, and diseases whose management has been beyond human control, are now comparatively well understood. Undoubtedly the introduction of these germs into the system under various conditions and at various times lead to certain specific results. Nor is this less true of that portion of the human body more directly under the care of the dentist. It has been ascertained that the destruction of these germs and their exclusion from diseased parts, or indeed from the entire organism, is followed by favorable changes, and that usually a return to physiological conditions is the result. There are a number of chemicals and drugs which are said to be capable of bringing about these favorable results, and foremost among them is classed the bichloride of mercury.

The uses of this agent in dental practice are almost endless; it can be safely resorted to in all operations in which the result depends on the destruction of spores or microbes, which are now generally accepted to be instrumental in creating or maintaining diseased conditions. It can be used in solution of from one part in two hundred of water to one part in two thousand. A stronger solution than the former may not be safe, and weaker solutions than the latter are not supposed to be effective for the sterilization essential in dental surgery. The best method of having a stock solution on hand is to take 100 grains mercuric bichloride and add it to 1,000 parts of water at one time. This quantity requires the addition of alcohol, as the bichloride is not soluble in water to the extent of 100 in 1,000. This may be kept in a cool and dark place, and from it three solutions should be made, namely:

One of one part in 200
" " " 500 and
" " " 1,000,

in quantities regulated by the amount of each as may be required. The 100, 500 and 1,000 solutions are used only in small quantities, hence an ounce vial of each in the operating case is all that is necessary. To prepare them take from the pint bottle

Ten parts to 190 of water: makes one in 200
" " 490 " " " 500 and
" " 990 " " " 1,000.

A tumbler, bottle or small pitcher full of the latter should be made each day for the washstand to be used as it is, or it may be diluted with one-half of water, making a 1 in 2,000 solution to be used for purposes mentioned hereafter.

The dose of bichloride of mercury is from 1-20 to ¼ of a grain. In the solution prepared the following will be the proportions:

Solution.	Per Cent. of Bichl. of Mer.	In 100 drops.	In 50 drops.	In 10 drops.
One in 200	½	½ grains	¼ grains	1-20 grains
One in 500	I-5	1-5 grains	1-10 grains	1-50 grains
One in 1,000	1-10	1-10 grains	1-20 grains	1-100 grains
One in 2,000	1-20	1-20 grains	1-40 grains	1-1000 grains

In opening into a cavity for any purpose whatever, and whether after or before the application of the rubber dam, the cavity having been dried should be flooded with 1 in 1,000 solution. This solution should be used for sterilizing exposed pulps and disinfecting cavities when they extend near to the pulp. It is the solution *par excellence* to be used in implantation; in it all instruments used in this operation should be dipped and the hands, towels, syringes and anything else which may come in contact with the tooth or mouth should be moistened with it, for success in implantation depends mainly on perfect sterilization and healing of the parts by first intention. The foregoing table demonstrates that the minimum dose of the drug is contained in fifty drops of the solution (1 in 1,000), hence no fear need be entertained in regard to the poisonous action of the drug, as that quantity would have to be swallowed or otherwise taken into the system in order to administer the minimum dose, and 150 drops to get the effect of the maximum dose.

The 1 in 200 and the 1 in 500 solutions are to be used carefully; the former contains the minimum dose of the salt in 10 drops and the latter in 50 drops. These solutions are used principally in root-canals, and the quantity and strength to be used should be governed by the size of the dental foramen, as is generally indicated by the instrument used or by the age of the patient. In cases where so-called immediate root filling is practiced, the use of bichloride of mercury is essential. Its rapid and certain action in destroying disease germs and its preservative quality are brought into prominence. In teeth where the dental foramen is large, the 1-5 per cent. solution (1 in 500) should be used cautiously, while the 1-10 per cent. solution (1 in 1,000) may be used with impunity. The ½ per cent. solution (1 in 200) is used in root-canals whose foramina are small. But the principal use I have found for this solution is in painting those small irritable patches, which cause so much annoyance to those afflicted with them. These mucous plaques seem to have a certain course to run. I do not know to what causes they are due, or how they can be cured. They begin as a small irritating red spot, almost anywhere on the mucous membrane of the mouth or tongue, become gradually larger, generally about the one-twelfth of an inch in diameter, their surface is white or grey, and when in contact with the teeth, or when situated in folds of the mucous membrane, are very tender and painful; on the third or fourth day they are generally unbearable, and by the seventh or eighth have entirely disappeared. By touching these spots three or four times a day with the 1 in 200 solution, their progress is generally checked, though in some cases merely improved, but in either case they are less painful and disagreeable.

The 1-2 per cent. (1 in 2,000) solution is used for washing the hands, spittoon and instruments; the latter are dipped in it and rapidly wiped and rubbed clean, and when thus treated do not corrode. Of the forceps generally only the beaks need thus be treated. In this strength it may also be used as a mouth-wash, half of the solution and half of listerine, adding a few drops of the extract of white rose, jockey club, Mary Stuart or any other sold in the drug stores. These extracts and the listerine combined, to some extent at least, disguise the disagreeable taste and astringent action of the salt. These solutions have to be used thus without a definite knowledge of their exact action until it is definitely ascertained in what degree they are effective, and for what length of time they must be kept in contact with the parts to be acted on. For the present, at least, it is certain that no known substance has the properties of destroying parasites in so marked a degree as the bichloride of mercury. Its poisonous effect and its tendency to corrode instruments is the principal objection to its use; both of these can, in a measure, be overcome, and, with the exercise of good judgment, the use of bichloride of mercury will prove to be of much benefit to those who have not used it, or who have resorted to its use to a limited extent only. —*Dental Review*.

ARTICLE IV.

SOME DIFFICULT CASES AND THEIR TREATMENT.

BY L. P. HASKELL, CHICAGO.

[Read before the Illinois State Dental Society.]

Were the conditions of all mouths similar and equally favorable, the insertion of artificial dentures would be a mere pastime to the experienced dentist. But unfortunately for both patient and dentist this is not the case, as we all have good reason to know It is often difficult to make the patient comprehend this, as she remarks that " my mother (or some other intimate friend) has a set of teeth she can scarcely pull out of her mouth, and she can even crack nuts with them and why cannot I ?"

Often the work is undertaken without considering all the unfavorable conditions of the mouth; for while some mouths are so favorable that a set of teeth made by a novice will work well, others are so unfavorable that the utmost care and experience are necessary to construct them; the patient will have to exercise patience, and require a much longer time to learn to use them.

As long as I have been engaged in a practice exclusively prosthetic, new combinations still present themselves; and some of them are very difficult to decide as to what is best to be done to secure satisfactory results.

After a careful diagnosis of such cases, I explain to the patient the conditions of the case, and endeavor to make clear its difficulties and what may reasonably be expected from the work when completed. Often, not the least difficult factor is expense. Either the patient cannot or will not submit to the expense necessary to secure the best results, especially when a metal plate is a *sine vua non.* This is sometimes true of persons who, in all other things, procure the *best* regardless of expense. As for instance, a lady who was absolutely suffering from the non-conductibility of rubber plates, so much so that she was often compelled to remove them to relieve her mouth from the heat, remarked " I am not going to pay so much as that for a set of teeth;" and yet on her person were thousands of dollars worth of diamonds. She, however, came back two months later and had the teeth made, and said to me afterward,"no money could buy them if I could not get another set like them."

Sometimes patients, after being told what must be done to secure the best results, will allow you to complete a part of the work and then refuse to have the rest done because perhaps some tooth or root must be removed, and then complain that the work is not satisfactory, as the following case will illustrate:

A lady consulted me as to what should be done with her mouth, apparently willing to abide by my judgment. There were a few loose teeth and roots in the upper jaw, and anterior teeth and a few roots in the lower. I advised the extraction of all the upper and all the roots in the lower, and the insertion of an upper and partial lower. She consented, and I extracted the upper; but her courage failed, and she would not allow me to remove the lower roots. I made her a temporary upper, and impressed upon her the necessity sooner or later for a partial lower. She wore the tempory a year, and returned for her permanent. She still objected to the extraction of the lower roots. I made the permanent upper and told her she would have trouble with them unless she had lower posterior teeth to sustain the plate when the mouth closed, for the plate would be constantly displaced. The upper maxillary was very thin, and the lower teeth somewhat prominent, so that they would close outside the arch. Had it been a receding lower jaw, the teeth closing well inside, the upper teeth would have been in a measure supported. The upper set was all right in every respect, but the closure would diplace it. The result has been dissatisfaction and complaint to all her neighbors; though I sent her word that if she would let me do as I wished, and then the upper troubled her after a fair trial, I would make no charge for the work, so confident was I of success. But the conditions are even worse now than when the teeth were made, for the constant pressure on the front has caused complete absorption of all the process, and she now bites against a yielding ridge.

Another class of cases is where the upper teeth are all gone, and on the lower jaw the six anterior teeth and one or two bicuspids on one side remain. There being no teeth on the opposite side of the jaw to counterbalance the pressure of these one or two bicuspids, the plate is constantly displaced; for there is no remedy, but the extraction of bicuspids, because artificial teeth on the opposite side would soon yield to pressure and the pressure revert to one side. Extract and insert the partial lower and thus keep the pressure equalized. The extraction of one or two sound teeth subserves the best interests of the patient. This must be regarded rather than mere sentinent.

There are patients where in the upper jaw all the anterior and on one side all the posterior teeth are missing. In such cases the patient would be far better off if they were all out, still I hesitate to advise it, but do the next best thing, viz., make a suction plate, and put a clasp on one of the bicuspids to counteract the pressure on the other side in masticating; at the same time let the pressure be on the natural teeth.

Then we find patients in whose mouths all the lower teeth, and one-half or two-thirds of the upper are missing —from the central incisors back. Such a case I had a year ago. This is a worse condition than the one last mentioned for the lower artifical meet on one side natural teeth and unyielding pressure, and on the other side artificial and yielding pressure. Here is a case, again, where the only effectual remedy is the extraction of the remaining upper teeth; a partial remedy is secured by shortening the lower teeth, every few months, on the side of the upper natural, to relieve the excessive pressure.

Frequently where the palatal bone is prominent, forming an arch, and extending far back, if "vacuum cavities" are ever deemed necessary they should always be avoided in these cases, as they interfere with the success of a plate. Simply raise the plate entirely clear of it, but allow it to extend beyond at that point, far enough to find a resting place.

When the upper jaw is very prominent and the lip short, and the patient shows teeth and gums, often quite high, the artificial gum must be very thin, high and without seams. There is here but one method of supplying a denture that will fulfill all the requirements; that is by the use of continuous-gum work. With this the teeth can be set under the margin of the gums; the porcelain gum can be made thin as desired and yet strong, as it is baked to the plate, and you have a perfect denture. Some may say, use a gold or rubber plate and set the teeth (plain) against the margin of the gums. But you will have a weak denture, and one that is not as firm as if the plate was carried over the outside of the process. Besides, there is no mouth where the cuspid teeth have been extracted a year or more, that there is not an absolute necessity for making the gum fuller and higher at those points than elsewhere, and this can in such cases be done only with this style of work.

When the upper teeth and lower anterior teeth remain and the patient requires masticating surface, the insertion of a partial lower set is necessary. In doing this, the attempt is often made to relieve the pressure and wear of the anterior teeth by making the artificial teeth sufficiently long. This is always a mistake; the pressure of natural teeth on the posterior artificial teeth results in constant discomfort till the gums have yielded to the pressure so as to let the teeth down sufficiently to allow the anterior teeth to meet again. Better let them meet at this point at first, and if the anterior teeth have become shortened by wear, "shoe" them.

In many interspersed partial cases the pressure is allowed to bear on the artificial teeth when it should, if possible, be left on the natural teeth, thereby preventing excessive pressure on narrow surfaces of gum.

I wish to emphasize the vast importance of the word *articulation* as applied to the closure of artificial teeth. More depends on it than anything connected with the success of artificial dentures. Many a denture, right in every other particular, is entirely wrong in this, and consequently a source of discomfort to its wearer.

Three rules cover essentially the ground. Never allow pressure on the six anterior teeth; never, in full upper plates, allow the pressure to be greater on one side than the other; never allow a second or third lower molar, which has projected forward so that its face shows, to meet an artificial tooth at that angle, as it will surely crowd forward the upper plate, the same as the meeting of the anterior teeth.

As a rule, a full lower plate is more comfortable and useful than a partial, because the pressure is distributed equally over the whole jaw.

ARTICLE V.

COPPER AMALGAM.

The operator of today, who is not familiar with all the methods and materials known to dentistry, is certainly laboring at a disadvantage. The present tendency of American Dentistry is toward conservatism. We are learning to use more discrimination in the selection of filling materials, choosing those most suitable and serviceable for the case in hand, regardless of any previous prejudices which may have existed.

Copper amalgam is wholly different from other amalgams, in the fact that it contains nothing but pure copper, combined with mercury. This amalgam has been used in England for a great many years, but in this country it is almost unknown in its clinical aspect, and has not received the attention it merits.

It would seem at a glance that its use here had been confined more to experimental purposes, its general adoption as a filling material having been considerably neglected, and this, we think, quite unwisely. We have used copper amalgam quite extensively for several years (six or seven), and therefore can speak advisedly concerning the results obtained. These are sufficiently flattering to induce its continuance in the future, giving it the preference over other preparations bearing the stamp amalgam.

Our experience in the use of this material has been confined largely to the English preparation known as "Sullivan's Cement." The shrinking propensity, so common to the majority of amalgams now on the market, is almost unknown to the one under consideration. This alone is a most commendable feature. As a preserver of the teeth which fall under the head of faulty structure, this material has no equal. To further substantiate the above assertion, we take the liberty of quoting Dr. W. D. Miller, who says: "The only filling at present in use which exerts a continual anti-ferment action upon the walls of the tooth, and its immediate surroundings, is the old copper amalgam. Not only that, but the very substance of the tooth containing such a filling, itself becomes antiseptic. * * * Secondary decay in such a case would be next to impossible, where anything like cleanliness was observed. This result is well supported by observations which I have had abundant opportunity to make for the last five years, here where this material is so extensively used, and I do not hesitate to say that if our only object is to check the destruction of tissue by caries, there is no material at present in use with which this object may be so surely accomplished as with a good copper amalgam." Space forbids our commenting at this time upon the various theories regarding the manner in which this material preserves tooth structure; suffice it to say that chemists who may be considered as authorities, assert that this preservative property is the sulphide of copper, formed by the action of the saliva upon the metal, which has the power of preserving by its antiseptic virtues. Other observers claim that the copper salts which are formed, act purely in a mechanical manner, by plugging or sealing hermetically the dentinal tubuli, thus preventing the possibility of destructive agents penetrating, and acting upon the tooth in a locality protected by such a filling. The latter theory we regard as being quite plausible, and we do not wish to lose sight of the fact that the former is not valueless.

Objections have been raised against the use of copper amalgam, because it discolors the tooth. This is not universally true, as cases are seen where this material has been in use for five years, the teeth to all external appearances appearing as clear and perfect as the day they were filled. Again, other teeth have become discolored, but not to a degree to make them unsightly.

In those cases where discoloration had taken place, it was remembered that the amalgam, when mixed, was dirty, *i. e.*, there was a decided soiling of the hand or mortar in mixing; whereas, in the other cases, the amalgam left the hand unsoiled. We are not prepared to state positively that the salts of copper are self limiting in their penetration of dentine, but if this should be the case, we would not expect to find any discoration of the tooth.

We have lately been using some copper amalgam manufactured in Chicago, which for plasticity and general working qualities, is preferable to the English preparation; and the objectionable feature of uncleanliness seems to be entirely overcome by a new process in its manufacture. We therefore can safely predict that if the manufacturer uses care in its preparation, selecting his materials with a view of having them chemically pure, a copper amalgam can be obtained which will yield uniformly good results. And we need not fear that the tooth structure will be marred by discoloration, provided proper precautions are observed in its introduction.

The mechanical texture of copper amalgam is exceedingly compact, and the property it possesses of receiving the most delicate markings, makes it possible to adapt it to the inequalities of the cavity with but slight pressure. It would be imprudent to place it in a cavity exposed to view, because the surface of the filling turns black, and therefore would be unsightly. Where amalgam is to be used for filling temporary teeth, nothing better can be found than copper amalgam.

It is safe to predict that amalgams will not yet be dispensed with; this being true, when we are compelled to use an amalgam, let it be the very best.—*The Dental Review.*

ARTICLE VI.

PEROXIDE OF HYDROGEN.

As peroxide of hydrogen is coming into such extensive use as a bleaching and remedial agent, the following, compiled from various sources, will be found of unusual interest. —[*Editor Dental Review.*

Mr. John G. Benedict, in a thesis submitted to the Massachusetts College of Pharmacy, gives a very comprehensive resume of the literation of hydrogen peroxide, in which it is stated that the substance was introduced to common use in 1870 as a hair bleacher; its value as a bleaching agent for animal substances being particularly great. As a germicide it also rates high. As a medicinal agent it was first proposed by Dr. B. W. Richardson in 1858. In May of the same year, Dr. W. B. Clark, of Indianapolis, published in the *Medical Era* his experience with it in a number of diseases, and Dr. W. A. Blackman, of Brooklyn, N. Y., read a similar paper before the New York Society for Medico-Scientific Investigation in July, 1866. Both of these authors spoke of its influence in destroying pus, and its curative influence in purulent ophthalmia, suppurative otitis media, gonorrhœa and leucorrhœa. Pean, a French surgeon, used it as a spray in ovariotomy. Dr. Day, of Australia, (*Lancet*, January 11, 1868), used an ethereal solution in a case of diabetes, which recovered. It is recommended in cases of septic dyspepsia and ulcerated teeth.

It is rated as sixty times more powerful as a bactericide than carbolic acid; twenty times as powerful as salicylic acid, and forty per cent. more potent than corrosive sublimate

Dr. J. Mount Bleyer draws attention to the efficacy of peroxide of hydrogen in a variety of diseases or conditions where a powerful oxidizing action is indicated. Thus, it is in many instances a most prompt antifermentative and antiseptic, exceeding in power even corrosive sublimate by many degrees. As a disinfectant it is superior to chlorine or sulphur. As an application in form of spray, to diphtheritic membranes, and other morbid conditions of the throat, it is of the highest benefit.

It may be either used in its undiluted, commercial condition, or in dilution.

Although hydrogen dioxide (peroxide of hydrogen) may be prepared from the ordinary commercial barium dioxide (binoxide of barium) yet the field is so unsatisfactory that it is under all circumstances advisable to employ a purified barium dioxide. This is prepared in the following manner:

Commercial barium dioxide is reduced to a very fine powder, and small portions of the latter are added, from time to time, to dilute hydrochloric acid (spec. grav. 1.050) until the latter is nearly neutralized. The solution having been cooled and filtered, it is treated with a small quantity of baryta water, whereby any ferric and manganic oxide, silica, or alumina are precipitated. As soon as a white precipitate of crystalline hydrated barium dioxide makes its appearance, the solution is filtered, and to the filtrate concentrated baryta water added; this causes a precipitation of crystalline, hydrated barium dioxide. It is well washed, and preserved, in its moist condition, in stoppered bottles.

To prepare hydrogen dioxide, small portions of the moist barium dioxide are gradually added to a cold mixture of one part of sulphuric acid and at least five parts of distilled water, taking care to prevent the temperature from rising beyond 20° C. (68° Fahr.), and suspending the addition when the liquid has only a slightly acid reaction. The precipitated sulphate of barium is allowed to deposit and the liquid filtered off. It is best to retain the slight excess of sulphuric acid since the compound keeps better. The solution thus obtained, which scarcely ever contains over five per cent. of hydrogen dioxide, may be concentrated either by exposing it in vacuo, over sulphuric acid, at a temperature of 15-20° C. (59-68° Fahr.), or it may be exposed to cold, and the frozen portion removed. The residuary liquid will be much more concentrated, as hydrogen dioxide does not freeze, even at -30° C. (-22° Fahr.). If the solution is allowed to evaporate over sulphuric acid, it may happen that bubbles of oxygen begin to be given off. In this case, the further addition of a few drops of sulphuric acid will arrest further decomposition.

Hydrogen dioxide is easily soluble in ether. If the aqueous solution be shaken with ether, the latter dissolves out the dioxide. This ethereal solution is much more stable than the aqueous solution, and may even be distilled without decomposition.

The quantity of hydrogen dioxide present in any aqueous solution may be determined by strongly acidulating the liquid with sulphuric acid, and adding from a burette a solution of potassium permanganate of known strength until the purple tint of the latter is no longer destroyed. In this case the following reaction takes place:

K2Mn2O8 — 3H2SO4 — H2O2=K2SO4 — 2MnSO4—4H2O — 3O2
Potassium Sulphuric Hydro Potassium Manganese Water. Oxygen.
permanganate. acid dioxide. sulphate. sulphate

Each gram of potassium permanganate used corresponds to 0.108 grm. of hydrogen dioxide.

The reaction here quoted is given of the authority of Roscoe and Schorlemmer. According to others (Wislicenus, Schoene, Trommsdorff), the proportions are these.

K2MN2O8 — 3H2SO4 — 5H2O2=K2SO2 — 2MNSO4O — 8H2O—5O2
(314)

hence, one grm. of potassium permanganate would correspond to 0.541 grm. of hydrogen dioxide.

In commerce it is not sold in its pure condition, but in a dilute form. It is customary to designate the various grades of strengths by the volumes of gas which the particular solution is capable of yielding. Usually the commercial article is between "ten" and "twenty" volumes. By this it is understood that hydrogen dioxide, in its pure state, is a *liquid*, and not a gas; and the "ten volumes" is meant to say that the produce contains ten volumes of available oxygen; or, in other words, one measure of the commercial liquid can give off ten measures of oxygen. This corresponds to a strength of only three per cent. of hydrogen of dioxide. A "two volume" solution would be one which gives off twice its volume of oxygen, or which contains 0.6 per cent. of hydrogen dioxide.

The qualification, ten "volumes," originated some years ago, when the substance was first put upon the market and this qualification has been adopted in the price-lists of all countries.

It must be preserved in a cold, dark place, in glass-stoppered bottles, which should be small, if the consumption of the article is insignificant.

A new process for preparing peroxide of hydrogen has recently been patented in Germany by Siegfried Lustig of Breslau. It is briefly as follows:

Zinc amalgam is shaken with alcoholic solution of sulphuric acid and air. The mercury and the sulphate of zinc which is formed, and is precipitated in the alcoholic liquid, is removed by filtration, and the liquid concentrated in vacuo. It then represents an alcoholic solution of peroxide of hydrogen.—*Dental Advertiser.*

ARTICLE VII.

SOUTH CAROLINA DENTAL ASSOCIATION.

GREENVILLE, JULY 24TH, 1888.

The Eighteenth Annual Meeting of the South Carolina State Dental Association was held at this place. commencing this morning. The first meeting was called to order in Dr. J. W. Norwood's office, but was adjourned to meet at Knights of Honor Hall, where the other sessions were held. The following members were present at this meeting: President, L. S. Wolf; Second vice-president, Brooks Rutledge; Corresponding Secretary, E. C. Ridgell; Recording Secretary, R. Atmar Smith; Treasurer, G. W. Dick; and Drs. B. H. Teague, D. L. Boozer, J. R. Thompson, J. T. Calvert, J. C. Oeland, A. P. Johnston, Theo. Johnston, J. M. Quattlebaum, B. J. Quattlebaum, J. W. Norwood, J. Q. McDavid, J. H. Alexander, W. A. Courtenay, G. F. S. Wright, P. B. Connor, D. R. McCallum.

The minutes of the Seventeenth Annual meeting were read and confirmed.

RETIRING ADDRESS OF L. S. WOLF, PRESIDENT.

Gentlemen:—Now that I am about to retire from the position tendered me at our last meeting, permit me to acknowledge my sensibility of your kindness, and to thank you for the honor conferred. It always affords me great pleasure to be present at the annual meetings of our association, for apart from the pleasures enjoyed by the friendly intercourse of those engaged in a common cause, these meetings are productive of much good in disseminating useful knowledge and in elevating and advancing the interest of our profession, the meeting together and discussing of our differences evolve new ideas and better methods, and no member can fail to gain from them information that will be of daily use in his practice, and that will better equip him for the discharge of duties in ministering to suffering humanity. It is, therefore, gratifying to every one interested in dentistry to note the increasing interest manifested in this organization which has already been largely instrumental in correcting our grievances and dignifying the importance of our position among the learned professions. When I stop and allow my thoughts to revert to the first meeting of this association that I attended and compare it with the last two or three meetings, it makes me feel that the dentists have not been sleeping, but that they are well up in the march of progressive science, and have as yet no thought of lagging in the race of professional advancement. We have witnessed at this session a striking illustration of the progress in the apparently successful demonstration of the implanting of teeth by our honored guest, Dr. Herring, an operation which seems contrary to all physiological laws and would not have been attempted several years ago with any hope of success. This and like experiments and results have forced me to the conclusion that the impossible will not soon be reached in scientific investigation and invention, and that much is yet to be learned in the science to which we owe our allegiance. Another wise step in the right direction and one that will be of the utmost importance and benefit to the people as well as the profession has been taken in securing to us, by proper legislation, the privilege and right of protecting dentistry in a great measure from the imposition of ignorance and the disgrace of incompetence. I refer to the act passed by the last legislature prohibiting practice of dentistry in this state without first obtaining a license from the Board of Dental Examiners. In the matter of legislation I would suggest that an effort be made at the ensuing session of the legislature to exempt dentists from jury duty, a privilege I think we should have.

In conclusion, it rests with us to see that all quacks are banished from our ranks by enforcing the law granted us for that purpose, and thereby elevate the standard of our profession in dental education. Again thanking you for courtesies extended, I will bespeak the same kind consideration at your hands for my worthy successor.

The following gentlemen applying for membership and being approved by the Board of Examiners, were duly elected members of the Association: viz., Drs. S. S. Daniel, Spartanburg; W. M. Meador, Union; Manly Timmons, Edgefield; A. C. Strickland, Anderson; J. P. Carlysle, Greenville. Dr. Daniel being a graduate since the version of the State law regulating the practice of dentistry, was granted a license by the board to practice dentistry in the State of South Carolina.

Visiting dentists were extended the privileges of the floor during the meetings; prominently among these were Drs. John S. Thompson and R. A. Holliday, of Atlanta, Ga.

The following papers were read during the meeting, and discussed freely: "Failures," by Dr. B. H. Teague; "Micro organisms," read by Dr. J. H. Alexander, written by Dr. M. Bissell, the most aged member of the Association, now nearly or quite 85 years of age; "Amalgam" with illustrations. by Dr. Theo. Johnson, of Newberry.

"Vacuum Cavities," by A. T. Peete, of Branchville, read by Secretary Smith. Dr. G. S. Wright read a paper on "Dental Education." Dr. E. C. Ridgell read communications from Dr. Jas. Harris and C. N. Peirce; Dr. G. W. Dick, exhibited an electric dynamo, which he uses to run his electric mallet; he claims "that it is more powerful than the electric battery, is so simple on account of accuracy and certainty, is always ready for use, and has not the slightest waste excepting of course wear. The amount of the current varies according to the number of revolutions. Lights the incandescent lamp beautifully.

Dr. A. P. Johnson exhibited some specimens of crown work in the mouth of a patient, which was very creditable.

Dr. Wright mentioned that in 1884, the proceedings of the association had been printed, from the organization of the Association up to that year, in pamphlet form, including a circular on "The Teeth," the Dental Law, Constitution, By Laws, and a list of the dentists in the State. The Secretary informed the meting that several hundred of these were still on hand.

Dr. Alexander moved that ten copies of the pamphlets in the possession of the association be given each of the members applying for them, free; all over this number at the rate of 5 cents each, expenses on same to be paid by member receiving them. Carried.

Dr. Calvert applied to the association for the use of Dr. Gurley's plates for one month. Granted.

Dr. Alexander exhibited a book by Dr. Fitch, on the subject of Crown and Bridge work, illustrating this work as done many years ago, proving that all that is done now-a-days is not new.

Letters of regret were read from Drs. W. S. Brown; J. H. E. Milhous and B. H. Catching. The Association regretted their inability to be present.

The board of Dental Examiners read the following report: Resolved, " That parties to whom permanent license are granted at this meeting and hereafter shall be entitled to membership without any other initiation fee." Carried.

The Board recommended Messrs. E. H. Webb and H. K. Smith, respectively, for the Baltimore and University of Md., Scholarships. Endorsed.

Dr. J. S. Thompson, of Atlanta, exhibited his combination apparatus, for soldering, waxing, melting and illuminating purposes. [Note.—You can describe this as you and Dr. J. S. T. would prefer]. The thanks of the association were extended Dr. J. S. Thompson for his exhibit and illustrations, Dr. J. P. Carlysle for kind attention, and the Knights of Honor for the use of their hall,

Dr. Teague moved that hereafter the Association em ploy a stenographer at its meetings, amended by Dr. Calvert, and if necessary tax each member pro rata to pay same. Carried.

The treasurer having made sufficient collections this year, it was moved and seconded and carried that he pay all necessary expenses of the meeting, and Edward Perry for printing still due.

Dr. Teague moved that we do away with recommending beneficiaries. Carried.

Dr. J. R. Thompson was elected to fill vacancy of the Board of Dental Exrminers, occasioned by the expiration of Dr. Browns term and his request not to be re-elected. The board elected Dr. Wright as President of the Board.

The following officers were elected to serve for the ensuing year: Dr. J. H. Alexander, Camden, President; Dr. E. C. Ridgell, Bates, first vice-President; Dr. J. Ry. Smith, Williston, Second Vice-President; Dr. J. C. Oeland, Spartanburg, Corresponding Secretary; Dr. R. Atmar Smith, Charleston, Recording Secretary; Dr. G. W. Dick, Sumter, Treasurer.

The place for next meeting selected is Columbia, S. C. Time second Tuesday in May, 1889.

R. ATMAR SMITH, Rec. Secty.

—*Southern Dental Journal.*

ARTICLE VIII.

MICRO-ORGANISMS AND THE TEETH.

BY DR. M. BISSELL, OF CAMDEN, S. C.

(Read before the South Carolina Dental Association, July 1888.)

The injurious effects of micro-organisms on the human system is a subject of decided interest, one worthy of investigation on the part of the dentist as well as the physician and scientist, especially the action of those found in the mouths of all persons; even when the strictest care is used they will be found in the tartar encrusting the teeth

If the subject possessed any of the elements of sublimity, my hearers might realize the truth of the maxim, that there is but one step from the sublime to the ridiculous when I broach the subject of microbes being active factors in causing caries in the teeth by boring into them.

The vast number of parasites in the mouths whose peculiarities have not been described may afford room and vergi enough to accord to some of them more active work than has been accorded to them.

The mouth is not a very favorable location in which to examine any species of animalcules when fulfilling their destiny; though the habits of some have been noted, and especially a similar species out of the mouth, but existing in a fluid medium.

There have been numerous instances recorded of the injurious effects caused by the tunneling process of several microbes; for instance, in the moluska we find no utensil by which they are able to accomplish their operations. By what means is the delicate pholos, with a shell as thin as paper, and as brittle as a wafer, enabled to excavate deep tunnels in a rock as hard as flint? Many of the species burrow in stone as well as in more penetrable substances.

Some writers contend that the animal in the shell secretes an acid which acts as a corrosive solvent upon the mass. That there is an acid secretion by some minute microscopic creatures is an admitted fact. May not some species possess the means of making an entrance into the teeth, when portions of these organs are in an abnormal condition. either from defective original formation, or from the lack of the deposits of the elements essential for healthy tooth structure?

Why may not the microbes in the mouth be able to excavate the solid bone, when a similar species out of the mouth, but in a fluid element, can make their way into stone piers and utterly destroy the hardest ship timbers? The process may be slow, but time is an element in many operations, and the process of decay in the dental organs in a majority of cases is retarded, though in some cases it is rapid.

There does not appear to be very strenuous objections to the hypothesis as one of the causes of caries in the teeth, because of their usual dense character, or of the infinitesimal character of the animal, when the fact has been established of the destructive powers of the marine animals. The enamel

necessary expenses of the meeting, and E
printing still due.

Dr. Teague moved that we do away
ing beneficiaries. Carried.

Dr. J. R. Thompson was elected
Board of Dental Exrminers, occasion
of Dr. Browns term and his request
The board elected Dr. Wright as Pr

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Charleston, Recording Secretary
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—*Southern Dental Journal.*

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MICRO-ORGAN

BY DR. M.

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ditorial, Etc.

FF ON INSTRUMENTS, BOOKS, AND DRUGS.
rk Neurological Society has refused to indorse
of the Georgia Medical Society requesting the
tariff on medical books, surgical instruments,
As the Neurological Society contains a large num-
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must ultimately raise the price of instruments. Furthermore, under existing circumstances, a surgeon who desires an instrument can have it made by a maker at his door. If the tariff on instruments be swept away without removing the tariff on raw material, the instrument-maker's trade is destroyed, and the surgeon must import his instruments. The fact that the members of the New York Society are greater importers of books and instruments than those of the Georgia Medical Society, renders their action peculiarly significant.—*Medical Standard.*

As off-setting this action of The New York Neurological Society, the Medical Society of the County of New York passed resolutions urging upon Congress the repeal of the import duty on medicines, medical and surgical appliances, and everything used in the treatment and diagnosis of disease. Attention was called to this action of the Medical Society of the County of New York in *The Journal* OF April 7, though the *Medical Standard* seems to have found it convenient to overlook what the larger and more important Society, composed of general practitioners as well as specialists, has done. While the *Standard* claims that it is easy to see on what grounds the Neurological Society opposed the resolution of the Georgia State Medical Society, it, however, has failed to see what is so visible. The N. Y. Neurological Society took the ground, when it refused to endorse the resolutions of the Georgia Society, that the charges against native instrument-makers were too intemperate and sweeping. The Neurological Society said nothing about " discrimination against the American instrument-maker." Nor did the Neurological Society advance the entirely original and very unique opinion that the removal of the tariff on instruments would "ultimately raise the price of instruments."

When the *Medical Standard* says that the resolutions of the Georgia Medical Society were " originally offered as a piece of buncombe merely," it offered a gratuitous, unmerited, and entirely uncalled for insult to a scientific body of gentlemen whose time and lives are being spent in the interests of humanity. As medical men what have we to do with the instrument-makers' trade as compared with the health, comfort, and lives of sick people? Admitting that the members of the Neurological Society import more books and instruments than those of the Georgia Medical Society, do they import more than the members of the New York County Medical Society? Again, if the action of the Neurological Society "must have been dictated by the best interests of the profession," why did the members reject that portion of the resolutions referring to books and drugs, because the charges against instrument-makers were too intemperate and sweeping? Instrument-makers do not import drugs and books.

In this connection we beg to call attention to the following, from the *Medical Record* of July 28: In a speech on tariff reform delivered by Hon. Ashbel P. Fitch, of New York; a letter was read from a New York pathologist, in which he said among other things: "For my microscope I sent to Jena, where are made the best instruments for my work. At the factory it cost $94; to get it out of the custom-house 40 per cent more. Later I sent for an oil immersion lens, and paid $80 at the factory, 40 per cent. more at the custom-house. Herman Katsch, of Berlin, makes an instrument called microtome, for cutting infinitely thin sections or shavings from the surface of a piece of an organ of the body, hardened in alcohol. Herr Katsch is the only man in the world who makes this particular variety of the instrument. To prepare a section thin enough for careful study under the high powers of the microscope this mechanism is necessary. To get this microtome from the custom-house I had to wait two weeks and pay a duty of 40 per cent. on its factory price. The celebrated Dr. Koch, of Berlin, published a report of the cholera commission, conducted under the auspices of the Government. At most, twenty men in this country could require this work, and they must needs pay 25 per cent. duty to get it from the custom-house after paying its publisher's price and freight. What use could this report be to these scientists? To aid them in maturing methods of recognizing the disease when it appeared on shipboard in our harbors; to devise means to suppress it, to protect the country. It was to the expert work of one such scientist that the city of New York must give its gratitude that a certain steamship just developing cholera among its steerage passengers was detained at quarantine and the city escaped overwhelming infection. For Koch's report he paid 25 per cent. duty, and never received anything from the city or Government. When we look up from our laboratory tables, microscopes, microtomes, and alcohol—taxed to suffocation—and read in the papers of the United States Treasury filled to suffocation, we reflect that our scientific work takes much time, brings no money return, increases our outgoes, and has not even the encouragement of the Government nor laity.—*Journal of American Medical Association.*

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS. —Organized August 6th, 1883. President, Dr. Geo. H. Cushing, Chicago, Ill; Vice-President, Dr. T. S. Waters, Baltimore, Md ; Secretary and Treasurer, Dr. Fred. A. Levy, Orange, N. J.

The next meeting of the National Association of Dental Examiners will be held in Louisville, Kentucky, on Monday evening, August 27th, at eight o'clock, and at other times during the week, between the sessions of the American and Southern Dental Associations. It is important to have every State Board represented.

FRED. A. LEVY, D. D. S.,
Secretary.

AMERICAN DENTAL ASSOCIATION.—The American Dental Association will hold its Twenty-eighth Annual Meeting at Louisville, Ky.; commencing Tuesday, August 28, 1888.

GEO. H. CUSHING,
Rec. Sec'y

Monthly Summary.

Amalgam in Contact with Gold.—*By Dr. W. G. A. Bonwill, Philadelphia.*—A cause of failure in this useful, though much abused article, is that many gold fillings are allowed to remain on the grinding surfaces where proximal walls subsequently decaying have compelled the use of amalgam, and it is thus brought into direct contact with the gold. Take out the gold if you want proper anchorage, without cutting so much as to expose the pulp on the proximal service. If you do not, the alloy grows dark and unsightly, and nothing is added to its value for preservation from oxidation. Besides the tooth is much better supported by all amalgam. If a gold filling needs patching at the cervix, or on any of the margins, and gold cannot be made practicable, then do it with amalgam or pink gutta-percha. I have seen to my disgust, amalgam fillings patched with gold to set up galvanic action. Oxyphosphate is a good thing on the margins of cavities where the metal would show. It stands well in conjunction; gutta-percha does not.

It is justifiable to allow a contour gold filling to remain in an opposite cavity to be filled with amalgam, for if the latter has much gold in it the color remains quite as good as if touching a similar metal. The security, however, against shocks is to wedge well before contouring, and let them keep in contact, not opening and closing a circuit by intermittent touches.

The New-Departure idea that a leak forms a battery where it is against dentos is too trifling. The chemical action, if an acid be there, would take place simultaneously on each, and would dissolve dentos, whether permitted to touch an opposite surface of amalgam or of dentos. The acid will act as a solvent, and not galvanically; and does so just as rapidly and effectually on a smooth surface, at the union of dentos and metal, as at the point of contact. No better evidence is needed to disprove incompatibility as the cause than that when an amalgam filling is placed in close contact to the proximal surface of a perfect natural crown so that the same capillary surfaces are made as in nature, decay will as surely go on as if gold had been used. If more compatible than gold, there should have been no caries. This is also a fact when a porcelain crown is placed up tightly against sound tooth structure.—*Dental Cosmos.*

PREJUDICE AGAINST AMALGAM.—Dr. Francis, of New York, says: There are physicians who are prejudiced against amalgam. I have had some experience with homeopathic physicians in efforts to combat their prejudices concerning amalgam fillings and rubber plates. A lady came to me many years ago, showing much excitement, declaring that I had poisoned her daughter by putting amalgam fillings in her teeth. She stated that her child had been treated by her physician for a long time, but with no benefit whatever,and he finally decided that his failure was due to the presence of mercury in her teeth, which operated against his remedies and counteracted their effect. I requested her to bring her daughter to me. She did so, and I examined her teeth, finding four or five gutta percha stoppings and two of tin foil. No amalgam had been used, and I was almost sure of the fact previously. I was quite indignant to be thus charged with employing fillings affecting the child's health, and sent a sharp message to her physician in return. There is still much prejudice against the use of amalgam, and fears that the mercury will poison the patient or cause salivation. All this I consider absurd. My chief objection to amalgam as a filling is that it is not always reliable. Though I have seen a great many such fillings which have been in the mouth for years, and done excellent service, I have seen others which in a comparatively brief period have failed, the amalgam either receding from the cavity margins or the cavity margins decalcifying around the fillings. I suppose we must be more careful what amalgam we use and how we use it. To-day a lady requested me to fill a tooth with amalgam, and I did so. The cavity was on the posterior surface of a second bicuspid. In her teeth were a number of amalgam fillings, and all doing good service. One in a superior cuspid was perfect in color, and caused no discoloration to the tooth. So far as the chemical effect of amalgam on the system is concerned, I would not take it into consideration for a moment. Let us do our work with amalgam as thoroughly as that of gold, and we shall have less of these chemical effects.—*Dental Cosmos.*

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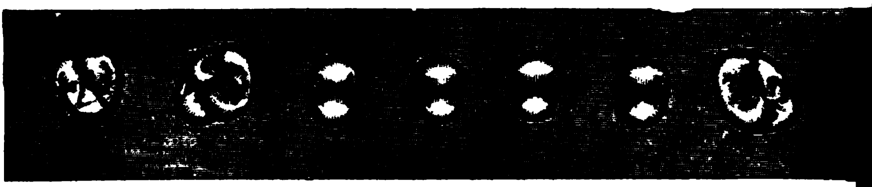

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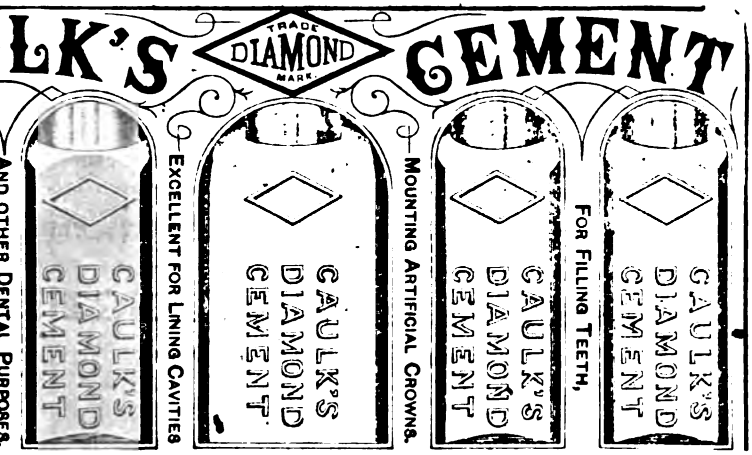

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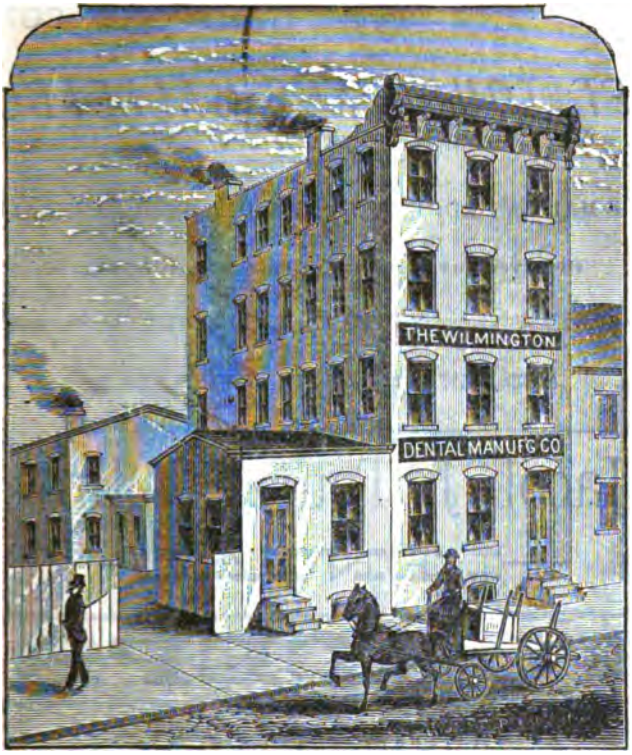

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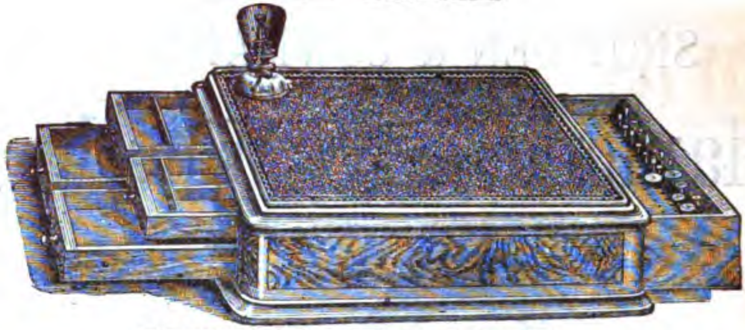

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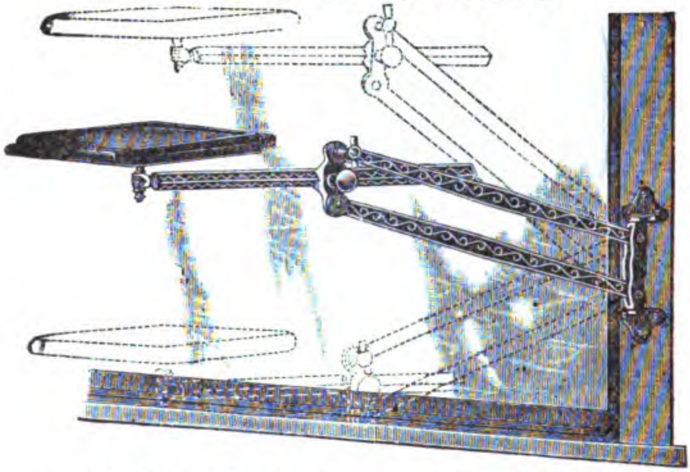

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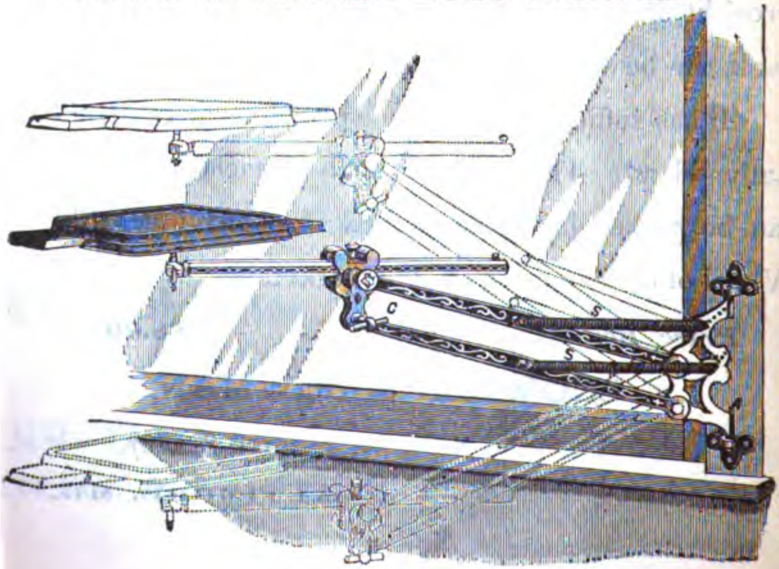

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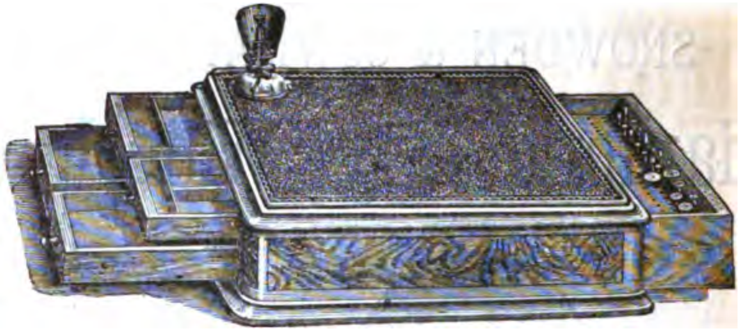

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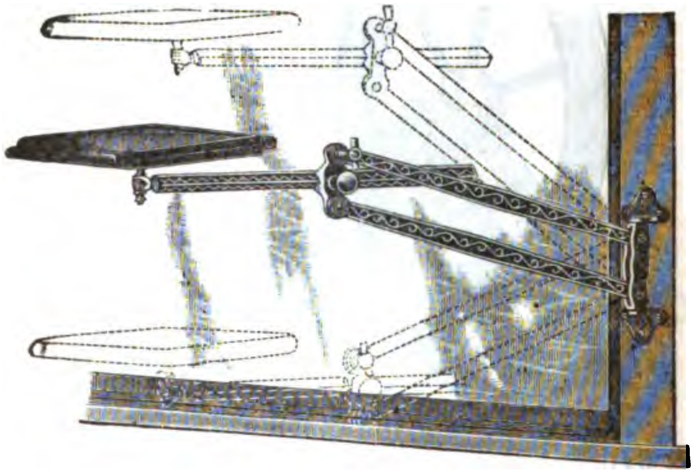
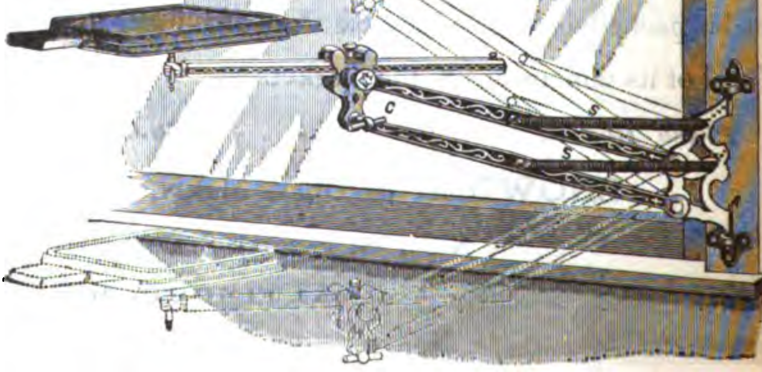
STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel

Morrison Bros.,

NASHVILLE, TENN.

—KEEP A FULL STOCK OF—

White's and Justi's Teeth,

—ALSO—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

EVERY LEADING BRAND OF

GOLD, AMALGAM, and CEMENTS

KEPT CONSTANTLY ON HAND

—THE ATTENTION OF—

Western and Southern Dentists

IS CALLED TO OUR LARGE STOCK OF

Instruments and Materials

OF ALL RELIABLE MANUFACTURERS

Careful Attention Given to the Smallest Order.

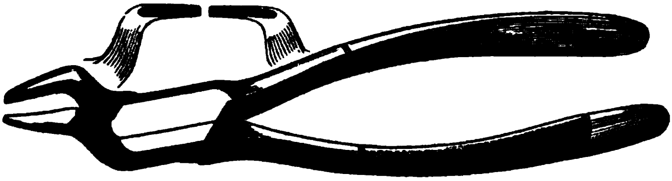
—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

17 **Subscription Fifty Cents.**

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, -	$2.00

ARTICULATORS

From - - - - - -	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - -	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - - -	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound, - - -	1.25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ouuce, - -	$4.00

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce, - - - -	$4.00

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - -	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - -	$4.00

Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.

GAS APPARATUS.

o. 1, complete	$ 36 25
" 2, "	37 50
" 3, " (upright)	36 25
" 4, " "	37 75
" 5, " "	31 25
" 6, " "	32 50
someter and Stand, complete with 500 gallon Cylinder, (filled) Inhaler, etc	177 50
eter and Stand, complete with 500 gallon Cylinder, (filled) Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

lvet Lined, Nickel-Plated Mountings	$ 10 00
ather Covered, " " "	10 00
Japanned, " " "	5 00
s of capacity	2 25
"	3 50
on Cylinder	4 50
"	7 00

GAS.

gallons of Gas	$ 12 50
" "	35 00
n Cylinder	2 50
" 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
$ 6					
7					
10	$ 12	$ 15	$ 17	$ 20	$ 30
14	15	17	20	25	35
18	20	25	30	35	40
22	25	30	35	40	50
26	30	40	45	50	60
35	45	50	60	70	85
50	60	70	85	1 00	1 30
85	1 10	1 30	1 50	1 75	2 25
1 25	1 50	1 80	2 25	2 70	3 50
2 00	2 50	3 00	3 25	3 50	4 50
2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

ing Stone Jar	$ 2 00
" "	3 75
" "	7 00
	35

Boxing extra.

DENTAL PLASTER.

	$ 3 50
	2 50
	1 60
	2 00
n	1 45
n	1 15
	70

Boxing and Porterage extra.

AMALGAMS.

Townsend's	$2.00	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	3.00	" "
Standard Dental Alloy,	6.00	" "
Lawrence's	3.00	" "
Arrington's	2.50	" "
King's,	3.00	" "
Sterling Amalgam,	3.00	" "
Chase's Alcohol-Tight,	3.00	" "
Olivers Amalgam,	3.00	" "
" White Amalgam,	5.00	" "

CEMENTS.

Roman Cement, best in the market,	$1 00
Agate Cement, in 1 oz. Boxes,	2.00
" " " ½ "	1.50
Weston's Insoluble Cement, ½ oz.,	1.50
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H. D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
H D. Justis's Acme Cement,	
One oz. Package,	3.00
Half " "	1.50
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	1.00
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.50
" " 1 "	1 00
Caulk's Hydraulic Pebbles, large Pk'ge,	2.00

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	"	2.25
Holdfast Rubber,	"	3.00
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Star Rubber,	"	3.50
Sam'l S. White's Bow Spring,	"	2.75
Whalebone Rubber,	"	3.00
Sterling Rubber,	"	3.00
Black Rubber	"	2.50

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$2 50
Sam'l S. White's	"	2.50

SNOWDEN & COWMAN.
9 West Fayette Street Baltimore

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

FOR SALE
AT ALL DEPOTS.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

THE
Gold and Platina Alloy
Requires no Washing.

MANUFACTURED
—BY—

cago Dental Manufacturing Co.

CHICAGO.

For Sale by SNOWDEN & COWMAN
9 W. Fayette Street, Baltimore, Md.

FOUNDED 1869.

GIDEON SIBLEY,

TRADE MARK.

Manufacturer of **Manufacturer and Dealer in**

Artificial Teeth and Dentists' Materials.

THIRTEENTH AND FILBERT STS.
PHILADELPHIA, PA.

DENTISTS!

DON'T READ THIS!

unless you want to economize in time, and consequently save money. To accomplish this result you must have the best Teeth in the market, and they are

Gideon Sibley's Improved Artificial Teeth.

From this claim we except no make of Teeth, foreign or domestic, and it is daily substantiated by the unsolicited testimonials of thousands of Dentists, many of whom use these Celebrated Teeth exclusively. Sample sets, $1.00. For sale by all dealers. Sample cards and abridged price list free by mail. All orders for Teeth and Dental Supplies will receive prompt and careful attention.

205

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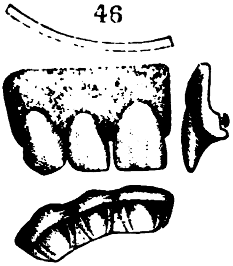

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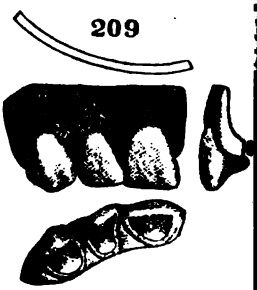

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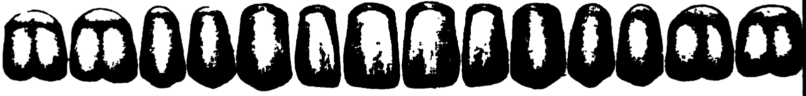
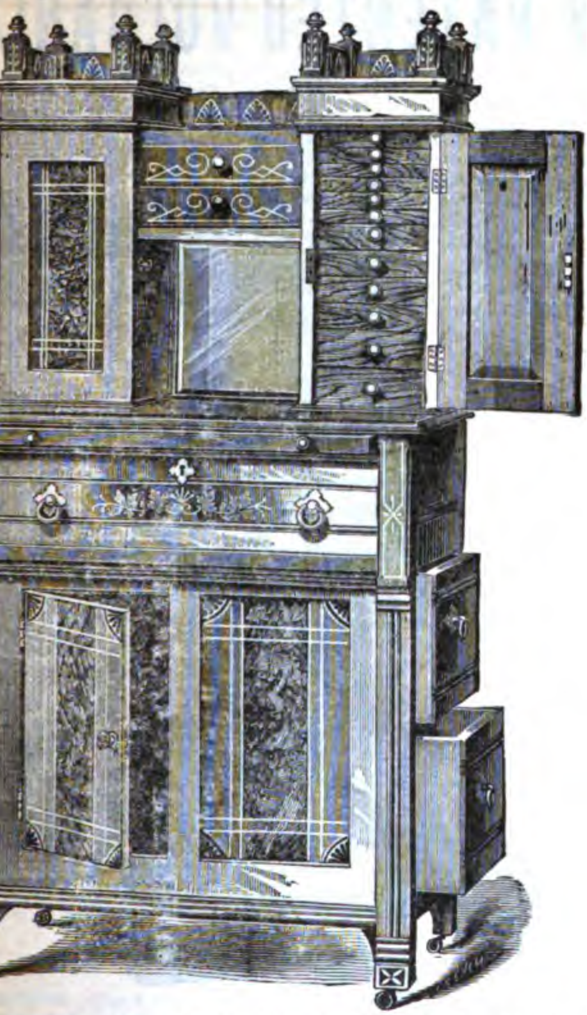


roved Cabinet Case No. 10.



t Case is made of black walnut, hard oil finish. The panels are
, and the mountings are all nickel plated. The total height is
; width 31 inches; depth 20 inches. The upper portion has 12
½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches
closes over all these drawers. On the opposite side is space
adjustable shelves for medicines. Connecting the two parts
rawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a
mirror, 10 x 10. The lower portion contains one drawer in
inches deep, with slide drawer over it 25 x 16¼ by ½ inches
th felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep.
oset, 20 x 16, 12 inches deep, with shelf.

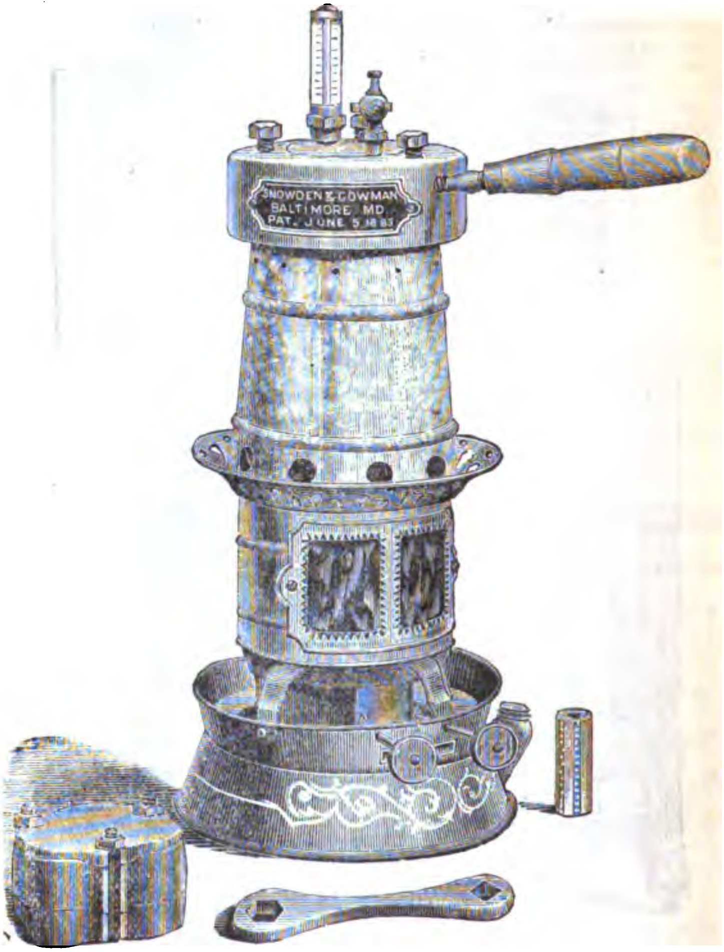
E, with Wood Top (Boxing Free) - -	**$45.00.**
With Italian Marble Slab, (white) -	**50.00.**
" Knoxville Marble, (pink) -	**50.00.**

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with he knowledge that it far supersedes anything of the kind now before it in strength, tility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five imes as great as it is required to vulcanize at 320°. They are tinned inside, which pre-ents the copper from corroding, if kept clean. The Vulcanizers are made larger than he ordinary ones, so as to take any flask in the market. The bolts are so arranged at the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive nd quick. The movement of the collar in unloosening is only one-sixth of the circum-erence of the boiler; it is from left to right: and is guided by lugs or stops, thereby oing away with the old method of unscrewing top from boiler, which often gives rouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted hat we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to t a screw driver, by which the stem can be turned around several times and grind elf tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—Howard W. Hoopes, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is gem.—Drs. Williams and Pennington.

—Your new Vulcanizer has been in use in my laboratory since first introduced and as given the greatest satisfaction.—C. E. Duck, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, sy and quick working of all its parts, it excels.—Thomas H. Davy, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to y entire satisfaction. I consider it the best, safest and simplest. I am sure that any ntist who sees its easy workings will claim all I do for it.—Bernhard Myer, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or ed. The facility of closing, cooling without resort to water, and opening, will be cognized and appreciated by all as great improvements.—C. E. Bierbower, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages opening and closing are very simple and efficient, and with less trouble than any in e market, and I consider it a great acquisition to the mechanical department of ntistry.—Wm. B. Finney, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the p, turn the handle from left to right, lift the cover and take off the cap. In returning e cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover or putting it on, and until the cold air is driven out of the boiler, then lower lever, cing weight about mid-way so as it will not blow off steam at 320°.

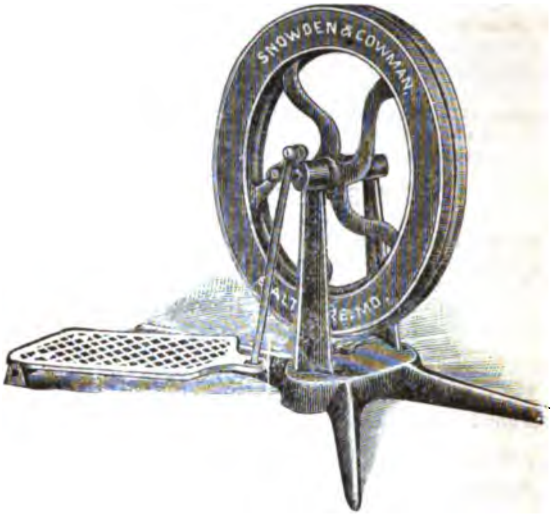
KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the ve the first time allow it to stand about fifteen minutes, until the wicks are thor-ghly saturated, trim them evenly and take a small clip off of the corner of each ck, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the ck-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, that the oil will not run down the outside of them. Keep the perforated tin clean d the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.

This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$8.00**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

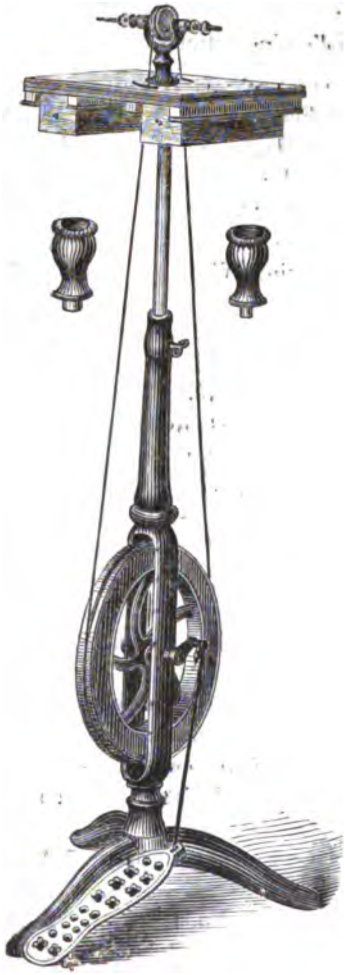
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - - -	15 00
" ' Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel. No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 5
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory.* It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated **Eleven** inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

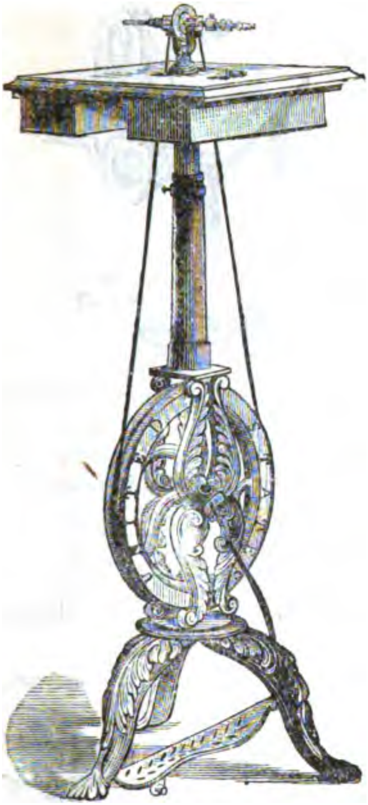
☛ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
Chucks, extra, - - - -	15

☛ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding teeth and polishing plates.

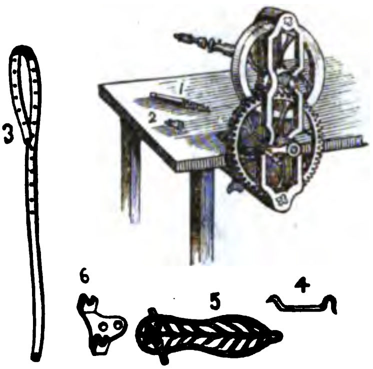
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut, - -	$16 00
" " " " Long " - - - -	16 00
" Stand only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

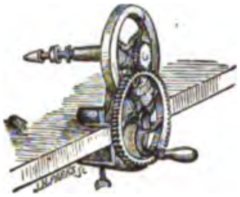
Portable Hand or Foot Lathe.



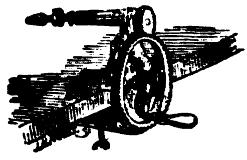
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

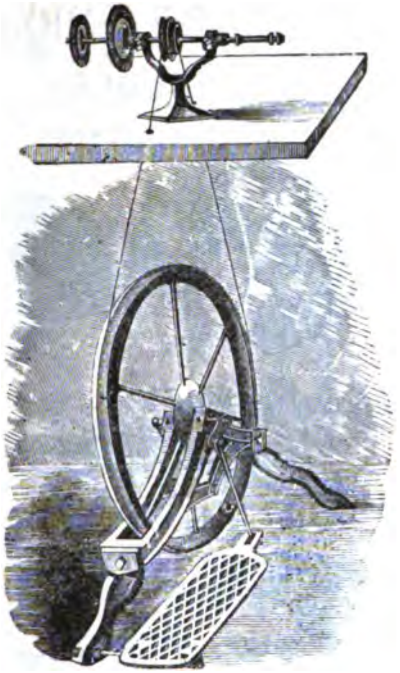
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Baltimore.

Diamond Fly Wheel and Lathe Head.



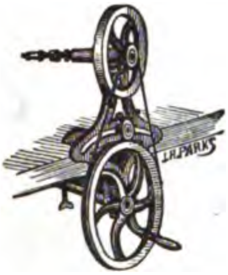
DIAMOND FLY WHEEL.

y-wheel is 18 inches in diameter, with wrought iron spokes, in an
ne, complete in itself, can be set anywhere and runs very steady.
RICE...$8 00

DIAMOND FLY WHEEL AND HEAD.

, boxed...PRICE $14 00

QUADRANT FLY WHEEL LATHE.

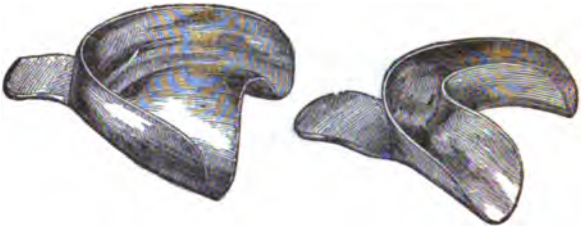


ns of the quadrant, the spindle can be raised from, or lowered to and thrown from or nearer to the operator. The cord is tightened nd the lathe is silent; the spindle is of the best quality of steel s washers and two chucks complete. Weighs only four pounds.
RICE...$4 50

BRITANNIA IMPRESSION CUPS,

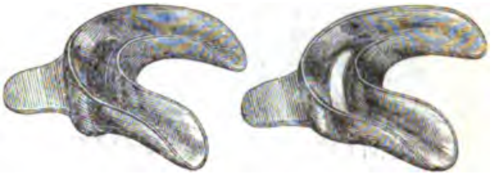
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



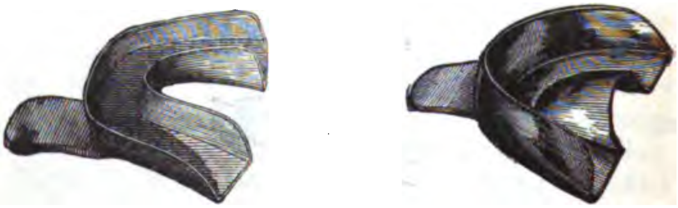
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................Each....................25cts

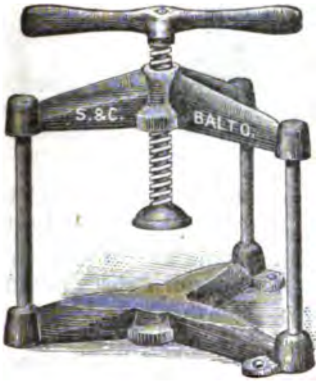
SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

OWDEN & COWMAN'S

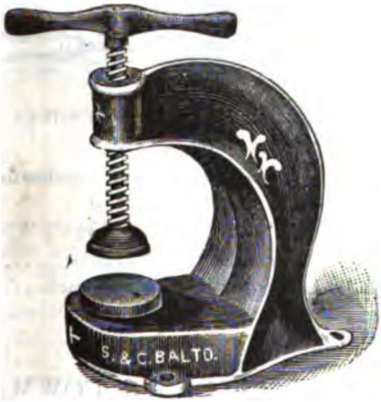
Flask Presses.

No. 1, Old Style Improved.



ress is intended to close the flask after packing with
It is of great advantage, saving screws and flasks.
ht rods are of wrought iron and the handle of the
be detached. They are *well made* and *very strong*,
een made larger, so that it will take any Flask in the
Price, - - - - $1.50.

No. 2, New Style.



ess is made of cast iron, very heavy, with steel screw
hable handle. It has a Pivot Plate to level up the
ing always a central pressure on the flask ; will take
n the market. Price, - $1.50

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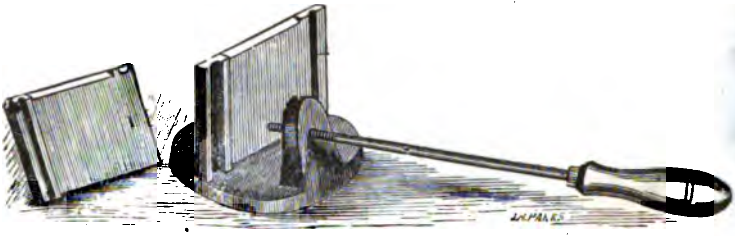

No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
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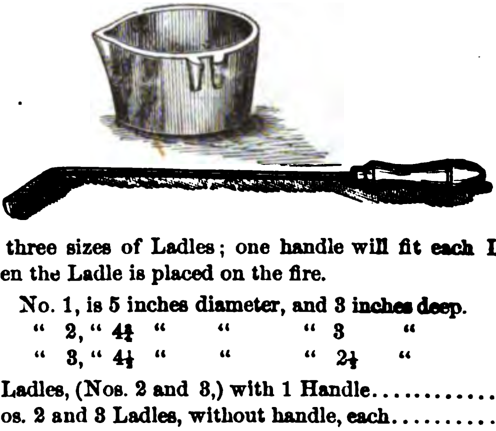

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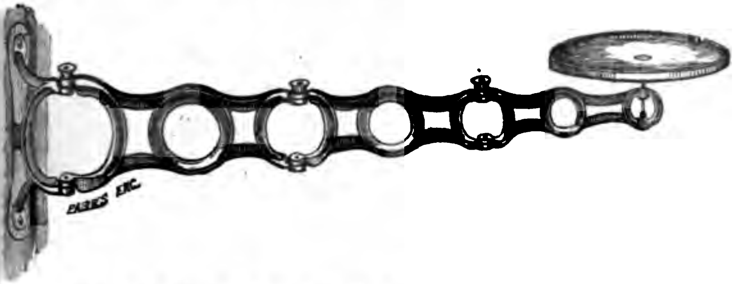

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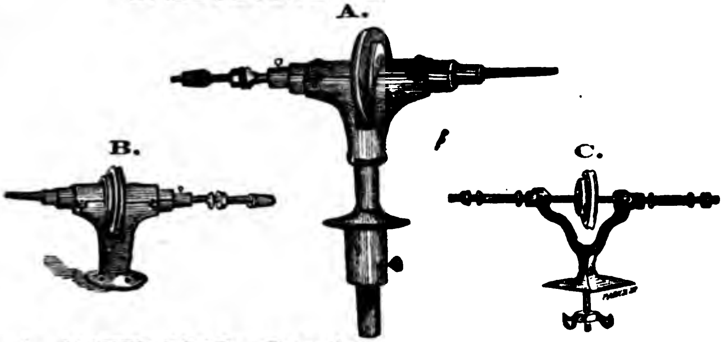

A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table................................PRICE $5 00

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C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which retain the wheels and brushes, are of Brass. The spindle is of the best unannealed hammered steel, and of the size to suit the holes in the wheels

PRICE................. ....$6 00

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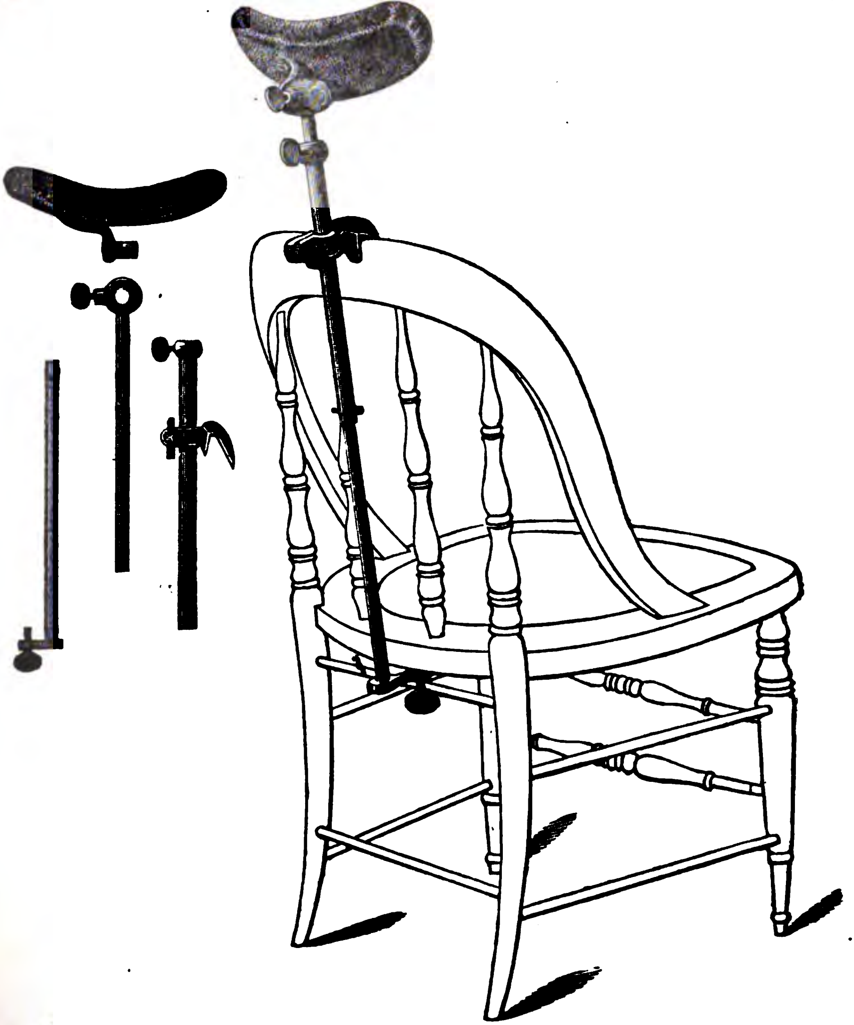

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[PATENTED JUNE 22nd, 1886.]

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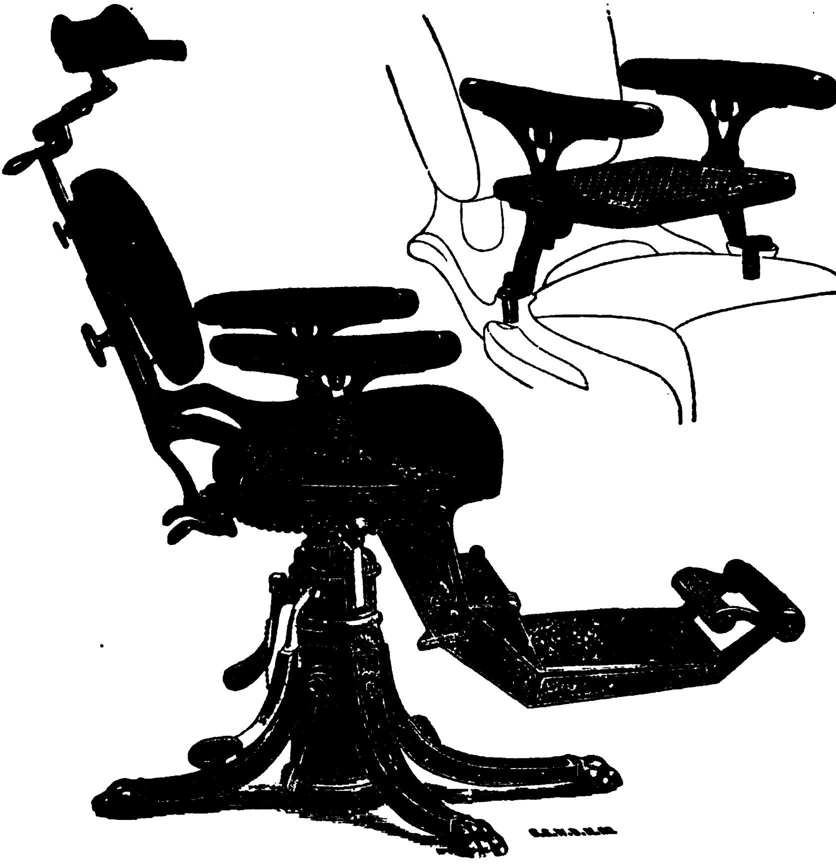

Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

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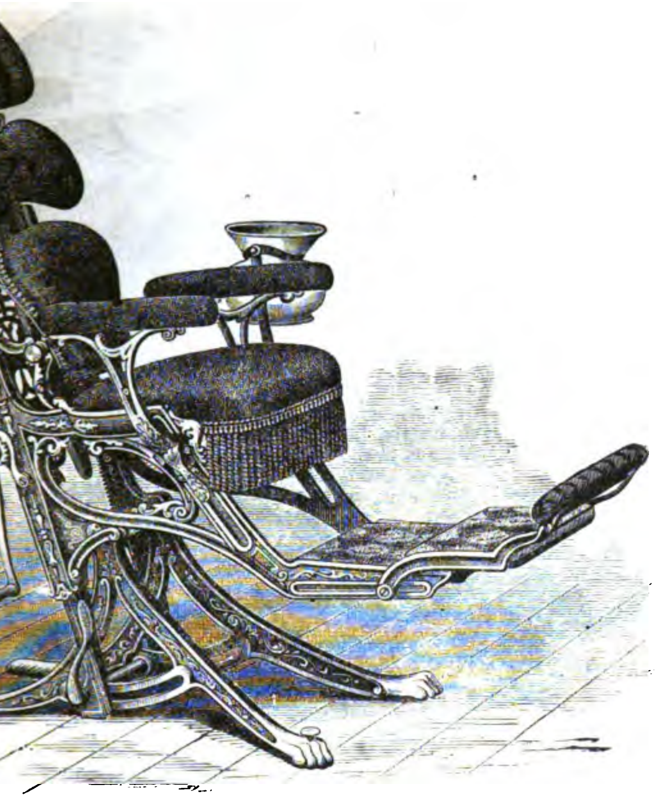
Reissue May 15, 1877. English Patent Dec. 7, 1867.



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ply either style of the Morrison Chair, with or without Casters ered with Casters, the price is $10.00 extra.

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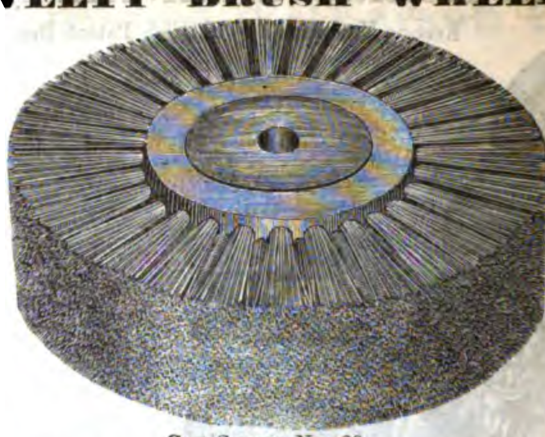

Cut Shows No. 29.

The hubs of these wheels are made of leatheroid. They are strong and will not split nor allow the bristles to push back or become loose. They have also a decided advantage in their small size, which permits their use in polishing articles of irregular shape without risk of marring or scratching. The Novelty Wheels, while superior in quality and neatness of finish to those with the ordinary wood hubs, are only very slightly higher in price. We have the sole agency for the dental trade. The following numbers are now in stock, sizes and numbers the same as those of our wood hub wheels, In ordering state the style wanted.

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"	2	2 "	"	"	1½	"	"	" .20
"	5	2 "	"	"	1⅝	"	"	" .25
"	6	2 "	Medium	"	1⅝	"	"	" .25
"	8	2 "	"	"	1¾	"	"	" .25
"	10	2 "	Soft	"	1¾	"	"	" .25
"	7	2 "	"	"	1¾	"	"	" .25
"	9	2 "	"	"	1¾	"		" .25
"	11	2 "	"	"	1⅞		"	" .25
"	14	2 "	"	"	1⅞		"	" .25
"	13	2 "	Medium	"	1⅞	"	"	" .25
"	12	2 "	Stiff	"	1⅞	"	"	" .25
"	19	2 "	Soft	"	2⅛	"	"	" .30
"	22	2 "	"	"	2⅜	"	"	" .30
"	21	2 "	Medium	"	2⅜	"	"	" .30
"	20	2 "	Stiff	"	2⅜	"	"	" .30
"	18	3 "	Soft	"	2	"	"	" .35
"	17	3 "	Stiff	"	2	"	"	" .35
"	26	3 "	Soft	"	2¾	"	"	" .45
"	25	3 "	Stiff	"	2¾	"	"	" .45
"	50	3 "	Soft	"	3	"	"	" .55
"	30	4 "	"	"	3	"	"	" .60
"	29	4 "	Stiff	"	3	"	"	" .60

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"	23	3 "	Stiff	"	2½	"	"	" .45
"	28	4 "	Medium	"	3	"	"	" .60
"	27	4 "	Stiff	"	3	"	"	" .60

STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2 Rows	Stiff	Bristles,	1¾	inches	diameter	each 0.25
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No.	51	2 Rows	Stiff	Bristles	1¾	inches	diameter	each 0.25
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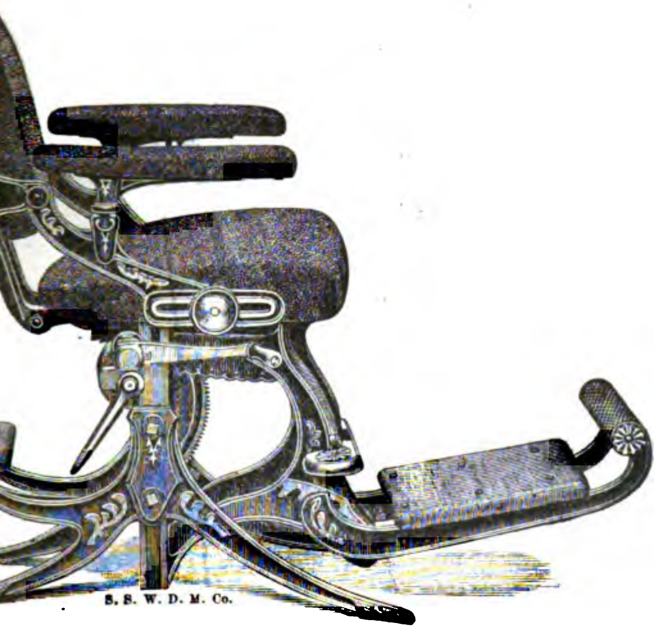

r 28. 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22
July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

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s designed especially to meet a demand for a chair which, while
of essential movements, could be sold at a lower price than the
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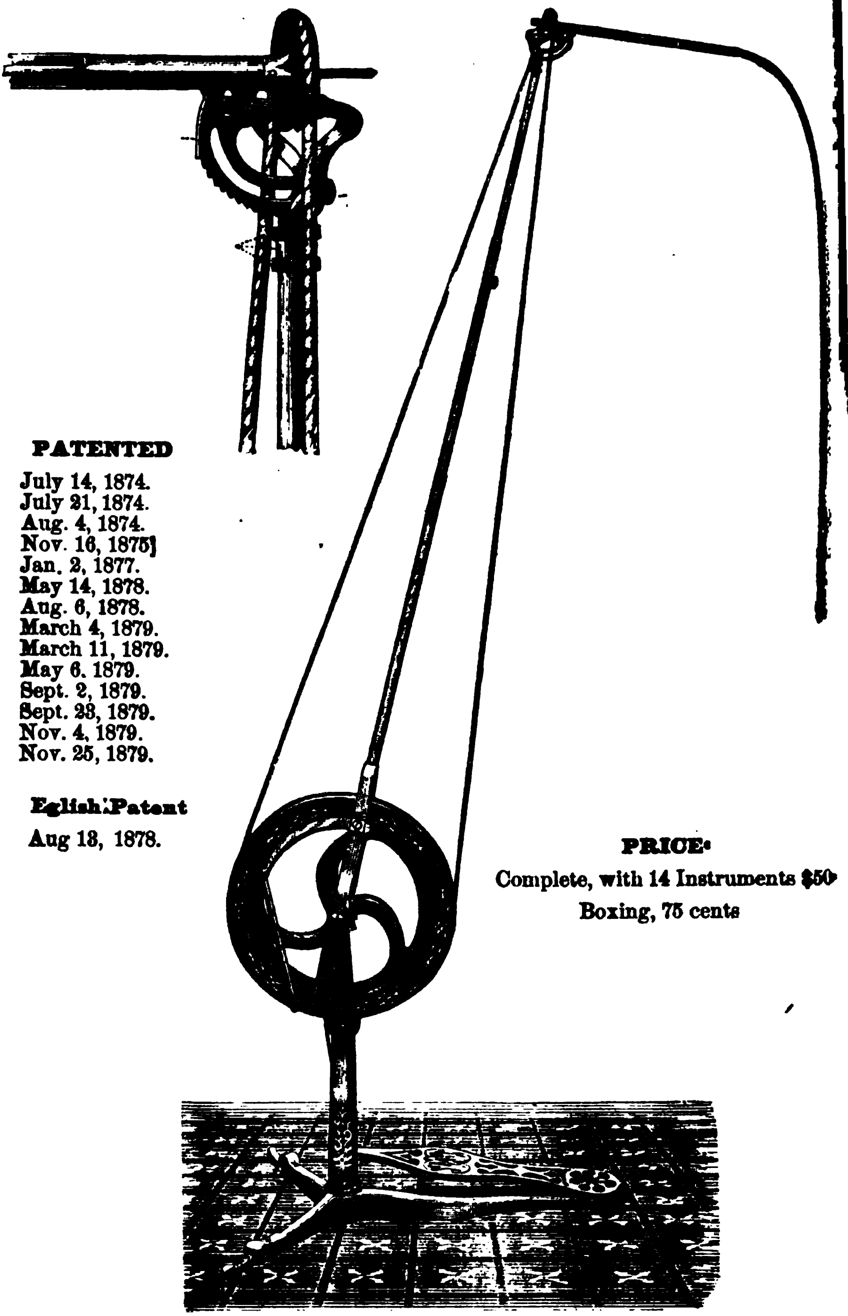

PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
Jan. 2, 1877.
May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish Patent

Aug 13, 1878.

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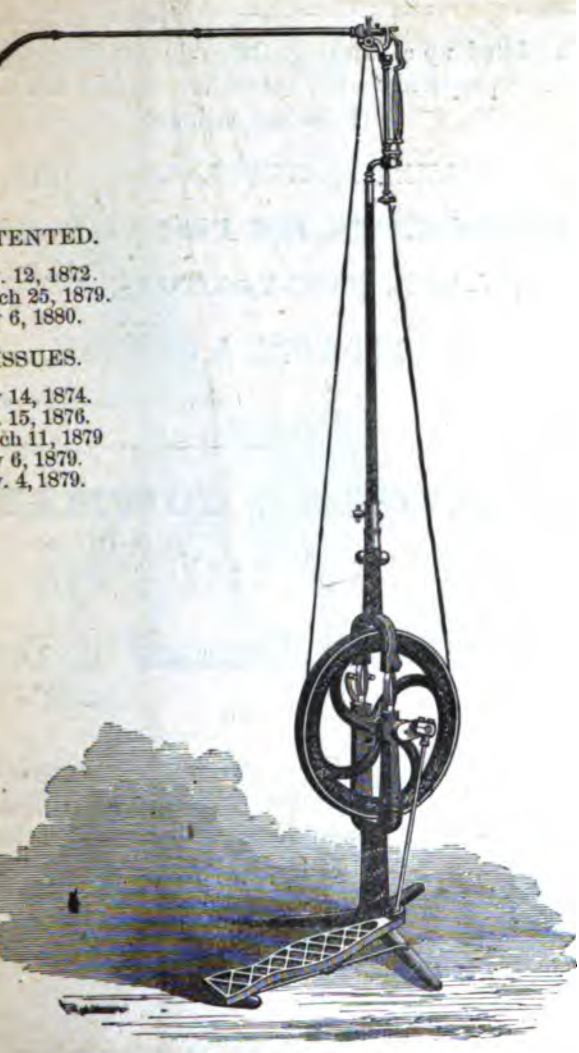

TENTED.

. 12, 1872.
ch 25, 1879.
6, 1880.

SSUES.

14, 1874.
. 15, 1876.
ch 11, 1879
6, 1879.
. 4, 1879.

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It is chemically pure Gold in a plastic state, without admixture of any foreign substance, of a brown color and homogenous appearance.

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3rd A tooth can be filled in one-third of the time it takes with any other Gold, simple hand pressure being sufficient to make a solid filling, the mallet (which is so disagreeable to most patients) can be dispensed with, and so sensitive teeth, or those whose walls are frail, can be easily filled.

4th. No retaining points are needed—simple undercuts are sufficient—so that very often the natural cavity, after the decay has been removed, has sufficient undercut to retain this form of Gold.

5th Being absolutely pure Gold, it retains its color.

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Beware of worthless imitations. Be careful to see that it is in the shape of small square pieces, packed in bottles and labeled "Steurer's Plastic Gold," because the imitations, although they may aparently work tolerable in the commencement, do not make a solid filling, but gradually crumble away.

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SEPTEMBER, 1888.

THE

MERICAN JOURNAL

OF

ENTAL SCIENCE.

EDITED BY

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XII. THIRD SERIES—SEPTEMBER, 1888. No. 5.

ARTICLE I.

SOME AFFECTIONS OF THE GUMS.

NK LANKESTER, L. R. C. P., M. R. C. S., L. D. S. ENGLAND.

hall endeavor, so far as time will permit, to bring your notice some of the chief and more important ns of the gums, including those that usually come he care of the general practitioner, and I shall hope how very important it is that we, as dentists, should oughly well acquainted with them.

e of all men should know what is the normal healthy nce of the gums, and should therefore also at once ny abnormal condition that they may present. In ing a patient's mouth for caries, or any other dis- ondition, we do well to cultivate a habit of thorough- e should not be satisfied with merely looking at the ut should be careful also to inspect the gums, for often learn much about the condition of a tooth or simply observing the state of the surrounding parts. Then, if anything abnormal be present, we should endeavor to find out the cause of it and, if possible, a remedy for the same.

I thought the following was, perhaps, the best *classification* of the different affections, and I must thank my friend Mr. H. Arthur Sansom for some help in this matter, to whose kindness we are also indebted for the loan of the various diagrams I shall send round.

We may broadly divide the affections into two classes; the LOCAL and the CONSTITUTIONAL.

The *Local*, consisting of those which originate in the gums themselves, include the following:—

1. Simple inflammations from injury, &c.
2. Parulis, gumboil or alveolar abscess.
3. Simple epulis, or fibroma.
4. Polypus of gum, or simple hypertrophy.
5. Papillary and warty growths.
6. Vascular tumors, or nævoid growths
7. General hypertrophy.
8. Pyorrhœa alveolaris (so-called Riggs' disease); and
9. Primary epithelioma, or cancer (carcinoma).

The second class, the *Constitutional*, consist of those which occur in the course of a general systemic disorder, and include—

1. Syphilis.
2. Scrofula.
3. Scurvy.
4. Purpura hæmorrhagica.
5. Addison's disease.
6. Stomatitis, of which there are three forms: simple; ulcerative; gangrenous (noma).
7. Aphthæ, or thrush.
8. Herpes; and
9. Lastly, the metallic poisons; lead, silver, mercury and copper.

We should certainly be able to form a correct diagnosis of any case we may meet with, though to do this often residerable practical experience as well as mere ·ledge. Many of these affections we, as dentists, alled upon to treat, and there are others which, gnosed, we should hand over to the care of the actitioner. These latter, which are generally the ous cases, we may from time to time, perhaps entally, meet with, and we should be just as well with them as we are with the simpler affections. should be the more insisted on, as we are more e them in their earlier stages, and by a proper liate appreciation of the diseased condition we le to warn our patient, and thus induce him to phylactic treatment, and thereby perhaps save long and serious, nay even fatal, illness.

we now proceed to discuss some of these affec- ould perhaps be well for me to first very briefly u of the chief points in the *structure* of the gums. nainly composed of a dense fibrous connective ering very closely with the alveolar and dental , whilst on their surface they are covered with a lar mucous membrane: this is mostly smooth, neighborhood of the necks of the teeth, it is be- ry fine papillæ.

these opening remarks, I will now try to place as briefly as possible a few observations on most ous affections which have been enumerated, and st consider the *local* ones, commencing with—

is or Gumboil.—The external manifestation on the eolar abscess. This affection consists of an in- usually running on to suppuration, occurring apex of the root of a tooth. The apex itself be- losed in the abscess sac, the latter being adherent at a little distance from the apex. The dental is included in the sac walls. The tooth pulp is ays dead, and it is the decomposition of the dead generally gives rise to the abscess. The dental first becomes inflamed at the apex, suppuration soon takes place, and the pus that forms strips off the membrane from the root, and an alveolar abscess is the result. When there is no exit for the pus through the pulp canal, it finds an exit for itself by "pointing" externally, and generally on the gums, as the so-called gumboil. In rare cases simple periostitis from cold, &c., may go on to suppuration, and so be the cause of parulis. The pus soon finds its way through the alveolar plate, and appears beneath the gum immediately (as a rule) over the diseased root as a small, red, tense, very tender swelling. There is always a good deal of pain, it being generally worse at night when the recumbent posture is assumed. Pain is of a throbbing character. There is always a certain amount of ostitis and periostitis around the seat of inflammation, so that gentle percussion on the adjacent teeth will cause pain, though of not nearly so severe a degree as will be that caused by similarly percussing the tooth actually connected with the abscess. This difference in tenderness will help us to decide which is the offending tooth. If left alone, the pus will come to the surface and discharge itself, leaving behind it a sinus which frequently remains open for months.

At the orifice of the sinus, little sprouting granulations often appear, indicating the site of a former gumboil which has discharged itself in this way.

As regards treatment, I cannot do more than just mention that in the early stages before suppuration has taken place complete relief may often be afforded by painting the inflamed area two or three times with the liniment of iodine, but before doing this it is very important to first thoroughly dry the gums previous to applying the iodine as otherwise the latter simply floats as it were on the moist mucous membrane without affecting it very materially. A good saline purge should also be administered. This will often be found very useful in the case of a recently stopped tooth which appears to be "going wrong," but which you do not wish to interfere with if you can possibly avoid so ıe tincture of iodine is much too weak a prepara- ɔf much good. We must not forget the possible lveolar abscess if neglected or improperly treated. oulticing (the usual resort) will frequently cause on the cheek externally. I had a case only two in which there had been a fistulous opening in for months, and a probe passed right through ɔuth; I removed a root and the sinus healed up y. When suppuration, therefore, has set in, ınd should at once be given by evacuating the by a small lancet or by the extraction of the oot.

ficial Gumboil.—Salter mentions that there is rm of parulis occasionally met with which is with loose teeth, absorbed sockets, and tumid ıe pus is situated in the substance of the latter, uperficial to the alveolar processes.

ext affection we have to consider is *Epulis.* This ɔeen vaguely applied to various tumors in and ums (a fact to be explained by the etymological f the word, *epi*, *ouli*, upon the gums). But by the rue epulis we mean those dense fibrous tumors ıpon the surface of the alveolus and involve the , and by their growth cause the overlying gum stretched over them, the gum being otherwise They differ in origin, history and structure from lulous masses so often found around decayed known as polypus. There is no connection ɔulis and caries as is the case with polypus and true epulis, then, is a hard dense mass of fibrous ting from the alveolar margin, usually between ınd more generally on the labial than on the ɔect. It is usually seen upon that part of the gum up between the necks of two teeth, one or more r being usually displaced by its growth, which l regular. It increases more in its basal area vertical diameter, starting from the porous and vascular alveolus and being closely connected with the periosteum usually by a narrow pedicle. The gum over it is usually healthy, but it may be mottled and slightly lobulated. The tumor itself is tense and elastic to the touch, insensitive and of low vascularity. Its size varies from that of a pea to that of a walnut and it is about twice as often met with in the upper as it is in the lower jaw. It occurs usually in connection with some one particular tooth, the removal of which, together with the excision of the tumor, nearly always results in a complete and immediate cure. It is very rarely seen in an edentulous jaw, and then it will generally be found to be connected with some hidden stump. Salter relates a good case in illustration of this, in which a tumor repeatedly recurred after excision until the real cause was discovered. The epulis extended from the canine to the wisdom tooth, the four intermediate teeth having been removed. It was excised again and again, but always recurred until on one occasion a first molar stump was discovered and extracted, after which there was no further recurrence. The alveolar periosteum, the endosteum and the fibrous tissue of the gum are all continuous, and all share alike in the development of this growth. They are perfectly innocent and painless tumors, but they may take on a malignant character.

As to the treatment. In an ordinary case it will be well to first try the effects of simple removal by excision with a scalpel, together with a small portion of the spongy bone at the base of the growth. If it returns, as is frequently the case, repeat the operation together with the extraction of one or more of the implicated teeth. The alveolus will thereby become absorbed and will no longer form a nidus for the recurrence of the tumor. When arising deeply from the socket of a tooth, it may then be necessary to cut away a V-shaped portion of the alveolus, together with a very small piece of the subjacent bone. This can easily be done with a Hey's saw and a pair of bone nippers. Any hæmorrhage can easily be checked by the actual

If the growth be unrestrained by treatment, it ue to enlarge and interfere with articulation and n, and thereby causes much inconvenience. The t rarely ulcerates, but it may be injured by oppo-; and ulceration thus excited may give rise to a d fœtid discharge. Sometimes sarcomatous cells up with the fibrous tissue, and we may then ex- ecur after removal.

us or *Simple Hypertrophy* of the gum comes next . This is purely a local affection of the gums te apart from the periosteum. It is generally with uncleanly habits, the presence of tartar or form of irritation, and is usually most marked borders or margin of the gums, and especially ntal portions. It consists in a simple hyper- he gum tissues, and is brought about by some nued irritation. The gums may be so increased o nearly cover the crowns of the teeth, and it is nonly met with, and most pronounced, in the of the mouth. These two models I now send very good examples of this affection. They presented to our society by Mr. Jones. The as a rule is very simple, and consists in scarifying and getting rid of the irritating cause, *i. e.*, by cleansing the teeth, removing all tartar, and he mouth occasionally during the day with a ution of tannin or other harmless astringent, to be added a very small quantity of Condy's fluid. will then, usually, soon recede to their normal ondition. I saw a case, yesterday, which Mr. eated for a long time before curing his patient. aused in first instance by wearing a regulation e hypertrophy was so extensive and rapid that g of the plate had to be discontinued.

re truly polypoid form of this same affection of ay be very frequently seen in connection with y large cervical cavity. It occurs as a small pedunculated mass, resembling the gum tissue, and more or less fills up the cavity. It is due to the constant irritation caused by the rough edge of the cavity coming into contact with the gums. The irritation leads to a slight chronic inflammation and consequent overgrowth of the existing gum tissues (*i. e.*, hypertrophy), in which the true mucous membrane elements take part. The tumor is usually tender and at times painful. The treatment, if any be required, consists in removing the cause, either by filling the cavity or getting rid of the tooth or root with its projecting sharp edge. When nothing more than simple excision of the growth is performed, it almost always returns. This is well illustrated in a case which Salter relates, in which the hypertrophied mass was about half as large as a chestnut, and much resembled ordinary gum in appearance. At first sight it might very easily have been mistaken for an epulis. It arose from the portion of gum situated between the three separated roots of an upper first molar and was attached by a short pedicle. It was first excised, the stumps were then removed, and there was, of course, no recurrence.

Papillary Growths come next on our list. These may occur on the gums, but are exceedingly rare. They consist simply of hypertrophied papillæ, and are really unimportant. Caustics sometimes arrest or cure the growths, but a free excision is usually the best treatment, though even after this they sometimes tend to recur.

Warty Growths are also very rarely met with on the gums, but they do occur, and much resemble the ordinary cauliflower excresences so frequently seen on the hands, &c. They are quite innocent, but there is often very considerable difficulty experienced in getting rid of them, just as is the case when they occur on the hands. At the same time, there is the liability for them to take on a malignant character. They are of a pale whitish color, and contrast very strongly with the surrounding red gum. The microscope-speculum I now pass round shows their structure. It is really a papilloma of the neck.

ular Growths.—Another very uncommon affection id or vascular tumor of the gum. Such usually ıdult or middle life, and are most commonly sit- the upper jaw, between the incisors and canines. generally of small size, about as large as a pea, often more or less pedunculated. They tend to in size; they are compressible, and can thus be o the level and color of the gums. They are of a d color, and bleed readily on pressure, &c. ıage is indeed their most important symptom; it ccurs at night, when in the recumbent posture, sts in a general oozing from the whole surface of h. In rare cases this may be very severe, and on ınt they may require removal, though they are innocent, and do not return when carefully eradi- his is best done by freely excising with the knife, , at the same time, a small portion of the subjacent ınd spongy bone. Cold and pressure will usually haemorrhage. Any subsequent sprouting gran- hould be touched with nitrate of silver. Before to excision, you might first try the effects of liga- growth, or of destroying it by caustics.

condition known as *General* or *Congenital Hyper-* the gums and alveolus is exceedingly rare. It iefly in children, and with it is frequently asso- ne other tegmentary hypertrophy, such as a thick se hair and nails, &c. The whole or the greater e gums and alveolar processes are involved in a ypertrophy. The greatly enlarged alveolar pro- covered by the much thickened gums; the latter e, inelastic, firm and insensitive. The growth ase to such an extent as to prevent the perfect the lips. The teeth are often quite hidden; es- this so in the front of the mouth, where the con- always more marked. Both jaws are usually The thickening of the gums is due to an immense f the fibrous tissue, together with an enormous enlargement of the papillæ of the mucous membrane. The teeth, too, are of an immense size comparatively. The progress of the disease is slow and unaccompanied by pain, nor is there any tendency to ulceration. The treatment consists in paring off the lobular masses of the gum, and then in excising the hypertrophied alveolus with a pair of bone nippers. The whole of the growth need not be removed in one operation. There is but slight tendency for it to recur. This treatment involves, of course, the loss of the teeth, but they are worse than useless so long as the hypertrophy exists. I am indebted to Mr. Weiss for these models of this affection.

We will now pass on to consider an obscure, though somewhat important affection, known as Riggs' disease, or a better and more correct name is *Pyorrhœa Alveolaris*. It is not so very uncommon, and consists in a rapid and premature loss of the alveolar processes, together with a certain amount of inflammatory disturbance. One of the first indications of the advent of this disease is seen in a thickening and rounding of the margins of the gums on both sides of the mouth, and they cease to be closely adherent to the necks of the teeth. Between the gums and cementum for a short distance there is generally a little pus to be found. The breath is fœtid or nauseating, and there is a considerable amount of offensive discharge.

Neuralgic pain is often present, as also a chronic inflammation of the gums. It sometimes follows scurvy and mercurialism. The causes and pathology of the disease are very obscure, but there are a good many reasons that point to its being a part of a constitutional disease. Treatment is very far from successful in curing this affection, and it rarely does more than temporarily retard the progress of the disease. It consists in first of all removing very carefully and thoroughly all tartar from the necks of the teeth and from within the margin of the gums, and as the seat of the disease is probably at the edges of the alveolar processes, it is sometimes very beneficial to scrape these processes; it,

gives considerable pain. Some strongly advocate
of caustics, &c., to be applied to the edges of the
d to be rubbed well up towards the necks of the
hin the gum margins. The following are those
vogue—Powdered sulphate of copper, iodoform,
sulphuric acid, chloride and iodide of zinc. As
ase progresses, the alveolus becomes more and
orbed, the teeth get loose and finally fall out.

now pass on to about the last, though by no means
important, of the local affections of the gums; in
ır as the patient is concerned, it is by far the most
t of them all, and such is the point of view in
should also be regarded by the dental practitioner,
may not come under his notice nearly so often as
he other affections. He may perhaps never meet
se in his own practice, and yet I hold that he
thoroughly well able to diagnose it should a case
der his notice or care. I refer, as you know, to
a or *cancer* and sometimes *wrongly* called *malig-*
is. The latter term should only be applied to
eloid sarcomatous tumours of the jaw that Mr.
as described. I have not time to say anything
ut this latter affection, and it hardly comes within
ory to-night, but there is a very typical specimen
der the microscope in which you can well see the
eloid or giant cells scattered about amongst the
pindle-shaped sarcomatous cells. Towards the
e a few fragments of the expanded bone which
a yellowish colour; you will observe a great dif-
etween this specimen and the fibroma, which you
ady seen.

this slight digression we will return to the con-
of *epithelioma* originating in the gums. It is
due to some long-continued irritation such as
ed by the wearing of an ill-fitting artificial denture,
esence of unhealthy roots, to which may often be
trong hereditary predisposition to cancer. I don't

think we should lose sight of this fact when dealing with artificial work. Any ulceration of the gums or mucous membrane of the mouth occuring in an elderly patient, and which does not readily yield to treatment, but rather tends to grow worse, should be looked upon with very grave suspicion as to its nature. These cases are generally first seen by a dentist, and often at a comparatively early stage of the disease, at a time when it may be a matter of life and death to the patient that the disease be recognized at once and properly treated. I fear that if such a case at an early stage of the disease were presented to the average dentist of to-day it would in but too many instances merely receive palliative and expectant treatment; meanwhile the disease would go on steadily but surely progressing, valuable time would be lost, and when at last the dentist hands it over to the care of the surgeon, all hope of a radical cure may be gone for ever, or at least be much more doubtful. Hence the great importance of the dental practitioner being thoroughly well acquainted with the disease, its diagnosis, and serious prognosis. It generally occurs in persons over forty years of age, and usually in the form of a warty or papillated growth, which ere long tends to ulcerate and break down in the centre of its free surface, whilst it continues to spread circumferentially, by invading the surrounding tissues. There is great induration of these tissues all round the growth. The central ulcerating portion soon becomess deeply excavated, the edges become raised and everted, ragged and irregular, and considerably undermined. The surface is sometimes very vascular, and bleeds readily on the gentlest touch. It has adirty unhealthy appearance, is of a greyish colour, and there oozes from it a little thin sanious discharge. The growth soon involves the adjacent tissues, such as the cheek, tongue, &c., the teeth in the affected area become loose and fall out, and it is not very long before the submaxillary lymphatic glands in the neck become secondarily affected. There is generally more or less pain, and sometimes it is very severe. The

w is more frequently affected than the upper.
stopher Heath says that nothing but very free and
noval offers the patient a chance of permanent re-
that it is much better to remove a piece of the
ickness of the jaw well beyond the seat of the dis-
er than merely the alveolar margins, since you can
l how deeply the bone may be involved. This
essarily to permanent disfigurement, but by doing
are running a very serious risk of its recurrence.
course, a case for a surgeon to treat, but it is oc-
y the dentist's duty to diagnose and hand over
se to the surgeon.—*London Dental Record.*

ARTICLE II.

ORRHŒA ALVEOLARIS, ETIOLOGY AND TREATMENT.

BY J. D. PATTERSON, D. D. S.

he annual meeting of this association in 1884 I
d to the profession a study on "The Catarrhal Na-
yorrhœa Alveolaris," giving a history of cases in
ctice confirmimg the identity of the disease with
ound on other mucous surfaces within the body.
tified at this time to present some further observa-
he association which received my remarks in 1884
n complimentary attention.

the meeting of the American Dental Association
g, at Minneapolis, in 1885, I again read an essay
ubject, giving continued experience in proving the
of the two diseases. Since that time I have given
l article upon the subject to the "Annual of the
l Medical Sciences," and its conclusions are em-
n Volume IV., pp. 465, 466, 467, 468, of that work.

I will not detain you by rehearsing what I have already published upon the subject, because it is well known to most of you, and I desire at this time to add instead continued study of the disease; however, I will very briefly refer to past published records. Up to the time covered by the present paper I had had under my care, since giving special attention to the disease, commencing about the year 1882, thirty-eight cases of well-marked pyorrhœa, thirty-three of which presented undoubted evidence of catarrhal conditions of the nasal or pharyngeal passages. I have maintained, and do still maintain, that catarrh; as known to physicians and surgeons, to which all mucous surfaces are exceedingly prone, exhibits closely every important pathological phase in appearance and effect to the disease we have called pyorrhœa alveolaris; and that differences found are merely the natural result to be expected on account of local anatomical forms different from other structures where is exhibited the well-known catarrhal peculiarities.

I have heretofore shown—

1st. The similar appearance of the affected mucous membrane in both diseases, and in the various stages of each.

2d. The identical character of the effusions; first being serous, containing numerous epithelial scales, and afterwards being filled with pus corpuscles and blood corpuscles.

3d. The infectious character of both diseases.

4th. The burrowing of pus, similar in both.

5th. The tendency to destruction of underlying bony tissue.

6th. The similar deposits thrown down in both diseases.

I have also claimed that catarrh is often present in the oral cavity without contagion from related mucous surfaces; also that it is resultant from contagion from the nasal passages or pharynx; that it is the result also of the interruption of the proper physical function in respiration.

found difficulty in explaining this point so as
ly understood, and I desire to state it again.
e, from one of the innumerable causes of nasal
have the characteristic nasal conditions, ending
then the resulting hypertrophy; now we find
ameter and capacity of the air-passages lessen-
sis—and for relief the sufferer becomes the well-,
much-to-be-deplored "mouth-breather." When
hing is instituted and left uncombated, nothing
miracle can prevent the mucous surfaces in the
rom becoming catarrhal. In mouth-breathing
condition of the gums is rapidly changed, the
which they are lubricated are dried up their out-
foreign spores and unnatural thermal conditions
ed, and catarrh of the gums—pyorrhœa, as all
ccustomed to term it—ensues in all its various
eable phases.

proceeding farther I will give the history of
as yet I have not publicly reported. I have
nall degree of credit to give to the fragmentary
f a few or individual cases, because almost any-
e proved by cases in practice, but at this time I
e careful record of so many cases—which rec-
s every case coming under my notice that with
knowledge of the subject would strictly be call-
a alveolaris—that I believe they must present
nds, as they do to mine, good evidence of my
he disease is properly denominated and consid-
"oral catarrh"; that they are valuable, as all
nducted statistics must be, in deciding upon
ted questions all over the scientific world.

.—January, 1888, Mr. S., æt. 26. All the teeth
o deep pockets between molar and bicuspid on
atient healthy, temperament sanguine lymph-
d no catarrh, but examination of nasal passages
presence; anterior teeth prominent, and not
ed with the lips.

CASE 2.—February, Master., G. æt. 17. Came to have anterior teeth cleaned and filled; superior bicuspids on each side affected, pockets extending only a short distance; labio-cervical aspect of anteior teeth stained badly; sleeps with mouth open; catarrh in nose, and had received treatment for same.

CASE 3.—February, Mrs. B., æt. about 25. Front incisors very long; gums receded; difficult to keep teeth covered with lips; an evident mouth-breather; had been under treatment for catarrh; several bad pockets.

Do not expect anything and do not promise anything in this case save temporary relief. After treating, placed a retaining appliance on all teeth back to the molars, lower and upper jaws, which I apprehend will have to be worn always.

CASE 4.—Miss R., æt. about 25. Gums affected around all remaining teeth, there being ten in upper and eight in lower jaws; one deep pocket in anterior prox. surface of cuspid root, caused, so far as I could determine, by calcic inflammation.

CASE 5.—Mrs. C., æt. about 28. All the teeth affected primarily with calcic inflammation, developing into pyorrhœa; had been under treatment; four lower incisors especially loose and ready to drop out. After treatment, inserted retaining appliance for the lower incisor, extending to the bicuspids on each side, holding the teeth firmly in position.

CASE 6.—Mrs. M., æt about 27. Complete set in place; anterior teeth prominent, but generally regular; in first stages of pyorrhœa; gums irritated and red at gingival margin; no calculus, but lack of cleanliness; teeth at gum margin very sensitive; gums loose to margin of alveolus. Diagnosis: Function destroyed by want of care and by mouth-breathing; lips do not cover tips when at rest.

RECAPITULATION.—Up to conclusion of this fourth paper upon the subject, I have now had forty-four cases, of which thirty-six exhibited catarrh in nasal passages, the

eight caused by mouth-breathing, calcic inflam-
partial dentures.
whatever may be the inception of the disease—
k this is generally easily ascertained—it is still
opriate to use the term "oral catarrh" in desig-
For instance, the inflammation may be caused
calcic deposits; it may be in the first place sim-
ry calculus, yet the calculus has only been the
step, and, if removed, the disease is, on account
royed gum attachment, afforded a starting point,
goes on as pyorrhœa, or, as I would say, an
rrh"—yet it is thus properly named. Catarrhs
e have their origin in numerous ways—from cor-
thermal change, from spores in inspired air, from
use, as in mouth-breathing, from irritants me-
introduced—yet their effects are classed under
ad of "catarrh." So I am of the opinion, should
atarrh cover all the mouth conditions where is
the classical catarrhal peculiarities, whatever may
the cause of the original changing of the prop-
n at the gingival margin of the gum. Here is
encement: some irritative whereby the integrity
tium ligamentum is destroyed. There can be no
otherwise, it is impossible. My experience and
n teach me that the principal cause of the trouble
catarrh in the adjoining passages, communicat-
mouth by contamination in the irritative secre-
by physical habits induced by the catarrh, or by
origin in the mouth, as in the nasal passages.
"catarrh" means this, and this only—"I flow" or
own," and is "a discharge of fluid from a mucous
e" (Webster, Dunglison, Harris); not—observe
rge of fluid from the nose, the fauces, the bron-
e stomach, but a mucous membrane, or, as the
ut it, "any mucous membrane" (Dunglison).
ll candor, why is pyorrhœa not a catarrh in the
ese plain, unmistakable definitions, and when too,

we see all the different pathological changes in the diseas exactly reproduced in catarrh? From the beginning w find in pyorrhœa "a fluid discharge from the mucous membrane," we find hyperæmia, we find hypertrophy. Then why is it not catarrh? We find catarrh in every part of th body covered by mucous membrane. Then, when it appears in the oral cavity, why must we call it somethin else? Why must the large territory of the oral cavity covered by mucous membrane and especially liable to irritation, why doubt that it, too, will become the seat of catarrh The medical diagnosticans have called catarrh catarr whether in the nose or in the bladder, if the symptom were identical, so as to insure definiteness and be rid confusing terms. So dental surgeons should also accep plainly speaking and meaning language in the treatmen of this disease, so that its pathology may be clear and it therapeusis may be better and easier reached.

In my opinion, the inception of this disease is ver often in uncleanliness. The catarrh has there its origi We do not often see it, or at least do not recognize it, unt it comes to us in its advanced stages, but could we see i beginnings, I have no doubt that the uncleaned gingiv margins of the gums, covered with decomposing mucou and swarming with microbes, is the commencement of t difficulty. Dr. W. D. Miller in the *Independent Practitioner*, page 283, says upon this subject, quoting Von Kaczo owsky: "After several years experience and a long seri of observations, he came to the conclusion that ma cases of loss of appetite, nausea, dyspepsia, and conseque general ill health, were to be attributed to an unclean condition of the oral cavity, independently of the condition the teeth themselves. Acting upon this conclusion, he w able to treat such cases with marked success by simpl insisting upon repeated cleansing and sterilization of t mouth and throat."

He further says: "When we take into consideratio that affections of the mucous membrane of the mouth ma uity and contiguity spread over the whole mouth at, and thence upward and downward over the ry and digestive tracts, through the eustachian the internal ear and brain, from the nose through ymal canals to the eye, through the sieve of the to the membranes of the brain: furthermore, when nber that the irritation from the terminal branches uintus in the gums may produce irradiations in ranches of this nerve or irritations in near and rgans of the body—when we keep all these things and remember at the same time that many people, Kaczorowsky rightly says, carry about constantly nt of filth in the mouth which they would not tol- a moment upon the skin, then we can readily ac- r many troubles which otherwise appear so inex- and stubbornly resist every treatment by the usual remedies. Individuals who go about with neglect ths, whose gums are swollen and suppurating, reath testifies to the intense fermentation going on unclean mouths, receive one prescription after an- are sent from one bathing place to another, to no whatever, when a thorough cleansing and disin- f the mouth, accompanied with the necessary den- , would restore them to health in a very short

it is no doubt true that pyorrhœa or oral catarrh, of first commencing in the nose or throat, first is in th from lack of care, and then communicates to the acts, as he says, "*per continuum et contiguum.*" es, however, when brought to us, are so advanced catarrhal condition so wide-spread that the start is y recognized.

we find further insight into the etiology of this dis- he study of bacteria, of its secretions? Not as yet. nd a very difficult matter on account of the large of different kinds to be found in the mouth and the of their cultivation.

In the recently published work, "The Annual of th Universal Medical Sciences," already referred to, the edito of the article on Pyorrhœa Alveolaris, Dr. Sudduth, M. D. F. R. M. S., writes as follows: " This is a term " (speaking of pyorrhœa) " applied to the secondary stages of a disease that has its inception in a catarrhal stomatitis. Bein confined, as a rule to the margins of the gums surroundin the teeth, it might be called a 'gingivitis' were it not for th general catarrhal tendency shown by the entire mucou membrane of the mouth and nasal passages. The intimat relation between a general catarrhal idiosyncracy and pyorrhœa alveolaris is more than a mere coincidence. It common occurrence in persons who have irregular teet has also often been noted by the writer. He considers tha this fact has, besides the matter of uncleanliness, a direc bearing upon its pathogeny. It is well known that the irregularities of the teeth present often an indication of degenerative taint, and that persons in whom irregularities occur are very prone to catarrhal affections of the respiratory organs, including the nasal passages. Their ski is also usually found to be very susceptible to inflammatory affections. Another is the offensive odor of the saliva i individuals who show this peculiar tendency to catarrha affections, even in persons who take the most scrupulou care of the teeth. In the majority of cases pyorrhœa is form of stomatitis in which the local and constitutional factors in the production of the disease are largely dependen upon a hereditary catarrhal dyscrasia for their ability t engraft themselves upon the tissues."

Dr. Sudduth, in summing up, says: " The most common cause of catarrhal gingivitis is found in local irritatio combined with some hereditary disposition to catarrhal affections. The next greatest etiological factor is symptomatic, the local manifestation of a constitutional vice. Th most common manifestation is that of syphilis and its antidotes, mercury and iodide of potassium, both of whic sometimes find expression in a localized inflammation

be the starting point for pyorrhœa alveolaris.
plication of the disease in its secondary stages
be no doubt of the action of micro-organisms.
feel justified, however, in conceding to them, as
position of specificity." One word more as to
lveolaris being of constitutional origin and I will
tiology of the subject. My experience with the
shown me its presence in the mouths of patients
generally suffering from catarrh, have as a rule,
t and healthy persons. I have never known a
ped symptom pointing to its origin in anæmia,
s, or concomitant with Bright's disease, urinary
oss of health from high living, malarial fever,
vers, or syphilis. I do not deny—indeed, I ad-
constitutional dyscrasia will retard or prevent a
ithout local irritation these constitutional symp-
y opinion, can never initiate a case of pyorrhœa.
strate: A patient contracts syphilis while teeth
are in good condition, and who goes through
with continued salivations, stands not the
anger of pyorrhœa if he persistently keeps his
, sleeps with his mouth shut—as a Christian
id keeps undue irritants away from his gums;
ie other hand, no man or woman, healthy or un-
free from danger of pyorrhœa if they persistent-
cleanliness, or breathe through the mouth and
arrh which may be present in the nose, pharynx
rt of the alimentary or respiratory passages.

sing this part of my paper on the etiology of py-
cannot refrain from my sense of satisfaction in
anner in which Dr. Sudduth has corroborated
ations on the identity of pyorrhœa alveolaris and
am proud to have found so distinguished an
i also not forgetful of those here to-day who had
s for my first effort upon this subject, and, so far
, are still of the same opinion. To my many
have endeavored to refute my arguments in the

papers first published, I have nothing to say, for not a single statement has been forwarded by them, which I deem worthy of debate. They have merely insisted that my catarrhal theory was wrong, but entirely failed to give scientific reason for their opinions.

I will now pass to the consideration of the treatment. My own treatment is simple and easily described. First, removing deposits, which, if they have not caused the disease, are prime factors in its later stages. In many cases much of the territory of the root which is affected is apparently free from calculus of any description, but careful examination will show minute cactus-like points, and the instrument must carefully pass over every part of the root affected which is or has been bathed in the secretions from the disease.

The key to success in all these cases lies, and must ever lie, in the thoroughness of the surgical procedure of removing all deposits upon the root. The instruments must be delicate, well adapted, and well tempered, and for the most part to be used with the push movement. I have always used Cushing's instruments, but the same work can be accomplished with other equally well adapted instruments. The territory must first be explored with a probe to prove its extent and deposit patches. With the expertness gained from experience I find there need be no failure to reach all surfaces liable to be affected and to remove the deposits. The most trying places to reach are to be found upon the inner surfaces of the roots of the superior molars. Yet, with patience and a knowledge of the particular anatomy of each individual tooth, which knowledge can be shown by probing, even these places can all be reached. If any part is neglected, a cure cannot be looked for. Those of us who have treated many cases cannot have failed to observe that in the healing process, if a slight point has been neglected, the bluish-red gum and the oozing pus will guide directly to it. My plan is, so far as possible, to operate upon one tooth at a time—not leaving it for another until ly satisfied that it is clean. It is no matter if o bleed freely, you must in any event be guided ıd the anatomical conformation of the root, and s well under profuse bleeding. I deprecate the ning of a number of teeth, then going to another mouth and returning to those first operated hat way territory, is uselessly overhauled again leaving uncertainty as to the operation at the plete each tooth as you go; so that you will not ırn again at that operation, or at any subsequent

g the surgical treatment completed, the first thing wash the *debris* of deposits and pus clean from and from the mouth with peroxide af hydrogen ess syringe. This accomplished, the mouth is rinsed again and again with sol. bichloride of ıd the deep pockets thoroughly syringed with

ncluding treatment and the continued treatment cleaning and washing with "Listerine," according well-known directions of all the catarrhal surerine not being a germicide, I combine with the e solution of bichloride of mercury when I deem requisite. In the use of the douche for nasal addition to the Listerine, or, rather, preceding ne, I use the following admirable preparation.

cid. carbolici	gr j.
odæ biborat. . . .	
odæ bicarb. . . .	aa grs. ij.
lycerine.	ʒ j.
quæ, ad	℥ j.

nown as "Dobell's solution," and is especially clearing the diseased surfaces of all viscid mucus preparatory to other medication.

any of the teeth are so loose as to be moved conby the tongue or by mastication, they must be secured firmly in one position, or a cure is retarded and often entirely prevented. This is a very important step—more so than the medication, or any other step except surgical—and I implore you not to do this with ligatures, but strike up metal dies and swage to the inner surfaces of the teeth a narrow strip of gold plate. then make the bands for each of the teeth and solder to the plate. If the teeth are elongated, grind them off, or swage or solder a lug over the cutting, or grinding edge of the tooth to exert pressure, forcing the tooth into its socket. Do not let this plate reach the gum, but it should rest about half-way between the gum and cutting edge, thus affording easy cleansing of the teeth with brush, which would be prevented did the plate rest upon the gum or quite near it. This plate may if necessary, be frequently removed to afford a more ready cleaning. Thus the teeth are kept immovable in proper position, and the new tissue of repair is allowed to organize in the diseased pockets, which is prevented and an irritation kept up if the loose teeth are not thus secured.

I am very much opposed to continued and frequent medication of deep pockets. The plasma thrown out to organize into repair tissue must not be disturbed until sufficient time has elapsed to afford time for healing. If, however, after about three weeks, an irritation still seems to be present, further surgical interference must be given.—*Western Dental Journal.*

ARTICLE III.

ULCERATIVE DISEASES OF THE MOUTH.

BY GEORGE J. DENNIS, M. D., D. D. S., ST. LOUIS, MO.

[Read before the Missouri State Dental Society, July 10, 1888.]

Superficial solution of the continuity of the external tissues of the body with the exudation of pus, lymph, and

ed cells, are among the frequent diseases of the
ucous membranes are especially liable to degen-
d ulceration, owing to their delicate organization
act that they are more abundantly supplied with
d glands of greater or less secreting power, which
ome occluded or become inflamed and result in
s of various forms. That lining of the mouth is
le to such inflammations and degenerations,
s it is to irritations external as well as to those
tic irritations, dependent upon irritation in other
e alimentary tract. Hence, we find in the various
ions arising from gastritis, enteritis, and other
ions of the nutrient canal, the mouth also becomes
tant factor. Constitutional diseases frequently
local manifestations in the mouth which often end
ve ulcerative processes.

other parts of the body, ulcerations take on a
appearances of greater or less diagnostic value.
be round, oval, or irregular; their edges smooth,
d; their sides sloping, perpendicular, or under-
eir bases soft, and extensively infiltrated, or the
may be hard and circumscribed, or very rarely,
be no infiltrations whatever.

floors of these ulcers may be sensitive and ex-
ainful, dependent upon the irritation, seat of the
nd the acuteness of the attack.

simplest ulcers found in the mouth, and those
uently seen, are aphthæ. They appear in small
oval patches, in adults generally on the lips, at
ion of the mucous membrane or to the gums. In
hey are more apt to be found on the palate. Their
interesting. From irritations, mechanical or
from acid secretions of the mouth, from perversion
n, or of the gastro-intestinal secretions, or from
g surroundings rendering the patient susceptible
inflammation is set up, catarrhal in form at first,
redness, and slight swelling of the part. Later,

the follicles of the mucous membrane become inflamed, little elevations containing pits appear on the surface. The mucous membrane becomes thickened by infiltration and in a few hours a whitish exudate is poured out in round, or oval spots, which vary in size, from that of a mustard seed to that of a bean. They are more often isolated, but may run into each other giving an irregular appearance.

The inflammation continuing there is quickly an increased secretion from the mucous membrane with cellular infiltration of the underlying tissue. The whitish exudate breaks down, degenerates, and the epithelial covering is thrown off leaving little whitish, yellow looking ulcers. Extreme sensitiveness of these spots on movement of the parts, accompanied by an avoidance of solid food, usually a lack of appetite and a feverish state of the system are characteristic of aphthæ. A slight odor may accompany these changes, but it is never so intense as in the severer ulcerative diseases. They remain, if not treated, two or three weeks, and again may heal in a few days on removal of the irritant.

The process of healing begins in a reddening of the floor of the ulcer, granulations covered with epithelium are thrown up from the bottom, and in a few days the entire ulcer has healed leaving no cicatrix.

When diphtheria is prevalent aphthæ may at first simulate it. However, in diphtheria the exudate begins on the tonsils and pharynx, in a thin translucent film looking like the white of an egg, works forward, growing thicker and more extensive, and springing from little centers as it spreads. The constitutional symptoms in diphtheria are early very marked and preclude any error in diagnosis.

Another ulcerative process is stomacace. It begins as an inflammation of the margins of the gums which quickly passes into destructive ulceration. The margins of the gums about the incisor teeth are its favorite point of commencement, then extending posteriorly to the molars. It is peculiar in that only one side is affected at a time. Later

rse it attacks the membrane lining the cheeks and
ut leaves the hard and soft palates entirely exempt
estructive ravages. Accompanying these changes
nsive redness and swelling and most offensive
emorrhages occur spontaneously. The secretions
vary and mucous glands are greatly increased
liva is changed in color to a brownish red. When
of symptoms is completed in the adult the mar-
rs penetrate deeper and deeper; the roots of the
oon denuded and by the extensive destruction of
p out; the pain at the same time being so great
a miserable existence. This disease seems by
to select children who have just completed their
tion, while it often attacks soldiers in garrison.
s ascribed are contagion and bad hygienic condi-
ccording to a noted writer these same symptoms
ose of ptyalism, and cites mercury as one of the
causes in the adult.

butus is a disease whose ulcerative processes in
are most extensive. It presents many of the
of the former disease; the process ending in
loosening and in the majority of the cases with
f the teeth. This difference is noted. In scor-
swelling of the gums is much greater, rising
above the crowns of the teeth. Scorbutus is a
onal disease, the ulceration of the mouth being
mptomatic while stomacace is idiopathic in nature.

syphilitic ulcers appearing in the mouth are chiefly
. Very rarely are they found primarily as the
on. Their seat is on the pharynx, soft palate and
As the disease increases in severity they extend
es of the tongue, but never to the buccal surfaces.
w slowly, are very permanent and stable in their
They have also a great tendency to perforation,
hind great ulcers with ragged edges, and hard,
ases. Only slight hæmorrhages occur, and the
slight that the patient experiences comparatively

little annoyance. Constitutional treatment quickly confirms the diagnosis as they yield in a short time to specifics.

Thrush is a disease of childhood belonging properly to the fungoid affections, but owing to the tendency of the mucous membrane to ulceration may be considered here.

The fungi present in thrush are not the cause of the disease, but simply one of the effects, and are found only in unhealthy mouths where the secretions are vitiated, acid, and the mouth already subject to inflammatory action. As in the other ulcerative diseases the health of the patient is usually poor and the hygienic surroundings very bad.

The fungi once finding a ready soil in which to grow, set up a higher grade of inflammation, leading to destruction of the epithelial tissue. As the disease progresses the sub-epithelial tissue may become involved and the epithelial patches covered with the fungi fall off.

On examination the loosened masses are found to consist of mucus, epithelial cells, pus, and spores, held together by the long slender filaments of the oidium albicans.

This disease may extend to the nasal passages and pharynx, and has even been found throughout the full extent of the alimentary canal. It is usually found in emaciated children; very rarely is it found in healthy persons. The symptoms are at first those of ordinary stomatitis, increased by heat, redness and swelling, pain on movement of the parts, a longing for cold drinks, a greatly increased amount of saliva and marked gastro-intestinal disturbance. A distinctly acid reaction of the mouth, together with the white patches, make the diagnosis easy.

So rarely is the oidium albicans found in the mouth of a healthy adult person, the following case treated by Dr. B. Merrill Ricketts, of Cincinnati, Ohio, with whom I had the pleasure of seeing the patient, may prove interesting. I give his paper as read before the Cincinnati Medical Society, March 1, 1887.

"H. T. L., physician, æt. 30, fairly nourished, habits good, bowels regular, subject to sick headache every three or four weeks, inveterate smoker (two cigars daily.)

bout August 1st, 1886, noticed that tongue and roof th was sore. Supposed it was due to smoking a examination showed several white patches on mucous ane of hard palate, one on the apex, and one on the the tongue.

ey were irregular in outline and but slightly eleva- hey were also in close apposition with the epithe- he papillæ being exposed where they were torn

e slight congestion accompanying these patches a burning sensation.

opped smoking and applied solution of boric acid week, but no improvement; changed treatment to tion of tannic glycerate for one week. Condition ed to grow worse. Solution (1.500) of bichloride cury was then applied for a few days without any . A five per cent. solution of argenti nitras was plied for three weeks. Condition at the end of this ry much worse.

ere was now inability to masticate solid food, owing excessive soreness of the gum and palate. Careful ation revealed the presence of another aphthous pon the tongue—making in all three—each as large ckel, and a large patch on the gums at either angle ower jaw, two small patches on lower lip and several r patches on each cheek.

e secretions of the mouth gave a neutral reaction.

henever the mucous membrane became abraided, the ost no time in attacking and developing upon it, aving the faculty of reproducing themselves upon etached.

is no wonder that the mouth should be a favorable n for parasites when we consider that it is the prin- hannel through which food, air and water enter the especially when the secretion are abnormal or there e gastric disturbance. The normal saliva being vir- a parasiticide does not allow them to enter unmolested.

Mr. Gruby, in 1852, was the first to show the true nature of this fungus. It being named by him *Aphthaphyte or Cryptogame du muguet.* It was afterwards called by Robin *Oidium Albacans* and referred to the genus Oidium. (" Hist. Nat. des Vig. Parasit," 1853.)

Mr. Clark says, (Disease of Tongue, page 85, London, 1873,) ' that it forms delicate horizontal filaments which are apparently homogeneous in structure and from which short articulated pedicles take their rise. The uppermost cells of these pedicles become expanded into oval bodies which fall off, germinate and become new filaments. It is generally found growing in tangled masses like minute bunches of mistletoe, mixed with the debris of scattered spores, cells of leptothrix and epithelial scales.'

About September 1st (or five weeks from the time it was first noticed) the treatment having failed to give the least benefit whatever, I decided to resort to some form of treatment that would be more heroic. This was done by applying the solid stick of nitrate of silver every other day, or as often as was necessary, to keep up a continuous sloughing of the mucous membrane and all parasites that it might reach.

Within a week there was a marked change for the better in all patches, except those which were nodular and somewhat elevated upon the cheeks.

These were removed with the scissors and their remaining cavities thoroughly cauterized.

So far there has been no return of those treated in this way.

There have been times when there was not existing any slough, but the surface treated with the caustic was not allowed to become entirely healed.

Improvements has continued until there is now to be seen but two very small patches upon the palate, each near the posterior molar and one at either angle of the jaw.

The one upon the apex of the tongue is almost indistinct, not (as might be supposed) due to any application of

caustic, but to coming in contact with the palate
ad been treated with the caustic.

ring all this time the patient has paid strict atten-
is diet. He being a physician could more fully
te the importance of what might otherwise be con-
valueless in the treatment of such an obstinate dis-
Ohio Dental Journal.

ARTICLE IV.

L AND PALATINE CAVITIES—CAUSE,
ODE OF PREPARATION, AND WITH
WHAT TO FILL THEM.

BY H. F. HARVEY, D. D. S., CLEVELAND, O.

efore the Northern Ohio Dental Association, May 8, 1888]

etiology of dental caries has been in the past, and
e subject of much thought in dental literature, and
discussion in the various societies throughout the

subject is one that demands and is receiving the
of the most scientific men in the profession, and
I could hope for or the most that I can expect to
ish, is to comply with the programme as prepared
xecutive Committee (without consulting the author)
g this question before the society for discussion.
of the fact that this subject has already received so
tention, would it not be well at this point to con-
ew reasons why this question has so long remained
d ?

he first place it must be borne in mind that there
paratively few men who are competent for scientific
tion.

a profession we are not systematic enough in our methods of observation. We do not study our cases with the critical care that we ought, or take sufficient notes concerning them.

Investigations in this direction must be conducted by men who have spent much time in preparing themselves for the work, and until we can secure a number of such men, properly qualified to experiment scientifically, the question will likely remain unsettled. and even then time must elapse for their conclusions to be verified.

It is gratifying, however, to know that we have some such men and that progress is being made. Work in this direction involves so much time and labor that it should receive substantial encouragement by the profession through the various societies. There are so many important factors that enter into the consideration of this subject that the causes of decay are commonly divided into two classes, viz., predisposing and exciting. The former includes hereditary, race, food, and climatic influences, modes of living, mental strain, lack of pure air and proper exercise, overtaxed nervous system, non-assimilation, and in fact all pathological conditions, the result of which is inferior structural development of the teeth, and the lack of power to resist the attack of what may be considered as the exciting causes. Under this latter class there seems to have been an effort on the part of investigators to find an active agent or a specific cause that would account for all decay in the human teeth.

Many theories have been advanced from time to time which vary as they are viewed from the scientific standpoint of the pathologist, chemist, electrician, or bacteriologist. At present the latter seems to be meeting with most favor, and according to this theory the micro-organisms take a very active part in the destruction of the human teeth. The experiments of Dr. Miller seem to have been conducted in a very scientific manner, (a fact which must carry weight with his conclusions,) and to quote briefly from him: "Decalcification is produced chiefly by acids resulting from of micro-organisms upon the carbo-hydrates in mouth, while the peptonization is produced e direct action of the protoplasm of the organisms ecalcified dentine or by a ferment which they And further, he claims to have proven by differal analysis that the special acid concerned is lactral or slightly alkaline condition of the mouth An acid condition is pathological. This pathndition of the secretions of the mouth frequently es some form of general disease and is often parturition. Acid foods and medicines doubt- important role in decay of the teeth, not only acting through the system. Local diseases of nd mucous membranes of the mouth often give dity of the secretions. Associated with these we most frequently find the class of cavities by the title of this paper. These cavities usually r near the margin of the gum, and occurring as ntly do in teeth that otherwise seem perfect in ould indicate that the immediate cause or causes a different origin from that which produces decrown of molars where there is defective enamel or approximal surfaces where contact is a factor sidered. Whether the exciting cause of these o be found in a specific that is common to all the teeth or whether they are the result of differces, I leave for this society to discuss.

we term erosion though most frequently occur- the territorial limits of this paper can hardly be it, and for a very able article on this subject I r you to a paper published in the April number *pendent Practitioner*, 1886, by Dr. E. D. Swain, . He leaves the subject for others to answer. satisfied to close the first part of this paper in manner and proceed to a brief consideration of division of this subject. " The mode of preparhis can be demonstrated clinically better than told, and as there is a clinic of this kind on the programm I will but briefly state a few principal points which of cours must be modified as the necessities of a special case demand.

If the cavity extends much under the margin of th gum I first apply an 8 or 10 per cent. solution cocaine t lessen both pain and hæmorrhage in securing the rubbe dam in position. To secure dryness and access to th cavity are the first important points and not always easy t accomplish. The clamp that I find most satisfactory fo the majority of labial cavities is Dr. Hodson's, No. 7 White's catalogue. This I modify by grinding the posterio part to about one-eighth of an inch in width. After forcin it to the required position place a small wooden wedge between the anterior portion of the clamp and labial surfac of tooth near the cutting edge. This will hold the clam more firmly in position, and the loop being broad gives a opportunity to gain access to the cavity from all direction The devise of Dr. Barnes, will be found useful in specia cases. After removing more or less of the decay with a excavator, use a fissure bur with square end and size i proportion to cavity, carry this at right angle with the axi of the tooth, thus forming floor and margin of the cavity a the same time. Make slight undercut with hoe-shape excavator or small wheel shaped bur and bevel the edge slightly with small finishing bur. There being no specia strain upon these fillings a slight anchorage is sufficien As regards the selection of a material for filling, circumstances must influence the operator in his choice for specia cases. The extent of decay, quality of tooth structur physical condition of patient, age, probable time that th tooth will be retained and location of cavity, are among th prominent points to be considered in deciding this questio For labial cavities gold is the standard, and gold or tin fo the palatine. When plastic fillings are resorted to, gutta percha or Hill's stopping should be used in preference t the cements where the cavities extend far beneath the ma um, as the agents that cause these cavities seem the cements.

DISCUSSION.

R. Butler: There are some good suggestions r in regard to the preparation of these cavities. curing of good access and dryness; and second, ier of cutting the cavity for the retention of the rial. Many cavities can be cut in the main with alone and often quicker and better than with the iere is no necessity for deep undercuts, but cut angle that the gold will be retained until we get securely anchored. This procedure is best in es for when once inserted we have no masticat- o dislodge the filling. Often the cutting of pits painful portion of our operations and if we can ve should.

H. Siddall advised the younger men in the pro- itness operations of the older members and gain ild.

Barnes had noticed in the labial cavities espe- where operations have failed, the decay in many xtended upward beneath the gum, and realizing signed a clamp and matrix that would fit up gum and not lacerate it. After applying the ie tooth if any portion of the rubber-dam extends vity he dissolves it out with a little chloroform. tion of the cavity is perfect and an advantage aving a matrix that can be pushed from side to it of the way, on account of its pliability. This successfully used in many cases where clamps do. In regard to cements he had heard that German makes were superior to our own, and ie case we should use them.

utler: It is not the filling that fails but the tooth How shall we treat these cases? He cited a ame under his observation, a short time previous, where some of the teeth had been filled entirely with gold and others filled at the cervical border with tin and the rest of the cavity with gold thus leaving a dark line, perhaps the thickness of card-board, along the margin of the filling. These fillings, however, were preserving perfectly while most of the all gold fillings leaked. He further stated that very often this line can be covered by the gum and that we can get a good effect by this use of tin. Thus can we not lay aside the idea of some little disfigurement of color for the sake of good preservation?

Dr. Siddall spoke of a case where two kinds of metals had been used by the dentist and the patient complained of a peculiar sensation in the tooth thereafter. He inquired if it was due to the formation of an electric current?

Dr. Bethel inquired if the doctor did not find that in such cases the two metals were always separated and the gum or other tissue formed a conductor? As it is generally understood that where two metals are brought into immediate contact the electric current is not established.

Dr. Dewey said there must be some intervening substance to act as a conductor or no current will be established. In answer to Dr. Butler he thought that we can help check the decay in this situation by correcting the faults of the patients. That we have patients who take extra care of their teeth as far as brushing is concerned, but are at fault sometimes in eating sweets especially at night, and not perfectly cleansing the teeth thereafter. He had noticed, particularly in the mouths of servants and confectioners, that a white line of decay about the necks of teeth, was often very marked.

Dr. Barnes had noticed that the teeth on the side on which people slept most, were more decayed than upon the opposite side of the mouth.

Dr. Fowler said, three years ago I excavated two cavities, a cuspid and bicuspid, on the lower jaw. Filled the cuspid with gold when the patient said she could not afford gold in both so filled the bicuspid with tin. A few weeks ient returned and I found the gold filling under- e the tin was preserving perfectly.

tler inquired how Dr. Fowler used tin foil.

wler: Fold it in squares and make pellets;

tler: By using direct and then lateral force in n you get a stronger mass than by direct pres- By ruffling the sheet of tin before using you fibres and it works much more satisfactorily.

ll was averse to using tin exclusively. He pre gold used by the Brophy method.—*The Ohio Dental Science.*

ARTICLE V.

THE SIXTH YEAR MOLAR.

W. H. HALL, D. D. S., MARTINS FERRY, O.

he Ohio Valley Dental Society, held at Steubenville, Ohio, July 2nd, 1888.]

he first permanent tooth to appear through the ot unlike the temporary teeth in that it has its d from the primitive dental groove," (Garretson,) temporary teeth are germinated. About the th of fœtal life the papilla, or germ of the sixth r, appears; eruption taking place about that ife indicated by its name. On account of its opment and eruption it is generally neglected, to the permanent set being not understood.

oolley compares this tooth to a waif, or outcast t, neglected through ignorance of its value. To the points of difference between it and the tem- h are readily distinguished, but we often hear the , "that is one of my *first* teeth," which we readily grant, but it is nevertheless a member of the permanent set and if lost will not be replaced. This latter statement often causes great surprise to fond parents who would be unwilling to bring to the altar of sacrifice a *permanent* tooth. Just at this point the patient should be given a practical lesson in dentistry, and until we have popular education on care of the teeth, we must do missionary work on our individual responsibility, improving every opportunity. Because little or nothing is done for the sixth year molar before necessity compels professional attention, we are often puzzled to know what to do—extract it or not extract it that is the question. It is absurd to say a general rule covers the ground. The circumstances vary with the age of the patient, the structural condition and arrangement o the remaining teeth, all aid us in making an intelligent and wise disposition.

Dr. Andrieu, of Paris, in a paper on the above subject read before the Dental Section of the International Medica Congress, at Washington recently, held that "the sixth year molar being in development, eruption and structure, an organ of transmission from the temporary set to the permanent, it should be extracted when the permanent teeth are in position. More room is gained thereby and a longer period of usefulness insured to those remaining." This i French, you know, imported, but I am willing to believe extremists do not always follow their own doctrines Granting the two points concerning development and eruption, we will note one point, viz.: *structure*, and show tha the permanent molars cannot be classed with the temporary teeth. Even in external appearance they give evidence o being more dense and more enduring in structure, but it i proven by analysis that the permanent teeth contain a large amount of inorganic material and a less proportion of organic than the temporary teeth.

Prof. Frank Abbott said he could see no differenc in structure between the sixth year molar and the othe permanent teeth under the microscope, but a very marke was apparent between that and the temporary edl makes the following report of examinations ns of four deciduous and ten permanent teeth as “ In the former the density varied from 1.00 to e permanent teeth the variation was between 1.98 The difference between their extremes being .89 favor of the permanent teeth.

e time it was the practice to save all the first per- olars, but we are not willing to accept that doc- ualified. I will consider briefly three different y, when we may be called upon to decide the this tooth. First, that period just prior to the f the bicuspids; second, after the eruption of the uspids and just prior to the eruption of the second rd, after the complete eruption of the second he importance of preserving the sixth year molar t period is passed cannot be questioned. Extrac- this time would be a serious disturbance to the f the development of both bicuspids and an inter- th the regular formation of the alveoli and sym- utlines of the maxilla. The second stage demands the exercise of our best judgment. If the molar ved for years of future usefulness it should be if the other teeth give evidence of poor structure, of usefulness does not extend beyond the eruption ond molar. It should be extracted to allow the olar to move forward and occupy the space, thus nore room for the third molar which will conse- a better tooth. There is danger of the bicuspids , falling back and even turning partly around, oying the articulation if the molar is extracted too the third stage, preserve the tooth if possible, nder protest. If extracted a large masticating ost, perhaps in a double sense, because the second tilt forward, thus presenting only the posterior corner to articulate, leaving practically no masti- face. The sixth year molar sometimes appears as a puzzling factor in cases of irregularity; however, I would not hesitate between a sound bicuspid and a decayed molar, to extract the bicuspid, provided the molar could be saved. With its broad masticating surface, the molar is of more value than the bicuspid, and would save much derangement of the articulation in regulating. Finally, we must preach and teach, to enlighten our patients concerning the true relation and worth of the sixth year molar; and our further duty is to operate on this tooth by filling, or with forceps tempered with wisdom and good judgment.—*Exchange.*

Editorial, Etc.

PROSECUTION OF AMERICAN DENTISTS.—At the Worship-street Police-court recently Dr. Huntley and Dr. Coe, summoned as of the American Dental Institute, 44, Finsbury square, appeared to answer a charge of having, on July 27, taken and used the letters "D. D. S.," or some other name, title, or description that they were registered under the Dentists Act, 1878, as specially qualified to practice dentistry, they not being registered under the said Act.—Mr. Melsheimer, barrister, supported the summonses (which by arrangement were taken together) and Mr. Waddy, Q. C., defended.—Mr. Melsheimer, said that the prosecution was taken under the Act 41 and 42 Vic., and the prosecutors were the British Dental Association. In the pamphlet issued by the American Dental Institute the names of defendants appeared, followed by the letters "D. D. S. Pennsylvania University," and "D. D. S., Boston College," respectively. Neither of these qualifications was recognised by the General Council of the British Dental Association, which only recognised degrees d by Harvard and Michigan Universities (U. S. A). homas Smith, solicitor's clerk, said he was employed rs. Beaumont and Bouverie, solicitors to the British Association. On July 27, he, acting under instruc- ent to the American Dental Institute, 44, Finsbury- vhere, in a waiting room, his name and address were a lady, who seemed to act as secretary. She hand- a pamphlet of the institute, on the inner first page of ie names of the defendants, among others appeared. at he was shown into the operating room. There he defendant Huntley, to whom he said, "Dr. Huntley, ie?" The defendant answered "Yes," and witness nted out the name of Huntley, asking if it was his, t the letters "D. D. S." meant. The defendant re- They mean doctor of dental surgery." Witness then the pamphlet was issued with his (Huntley's) authority, defendant then wished to know why the questions , and witness told him. Mr. Huntley then said that was published with the letters with his consent. In ng conversation the defendant said that the principal stitute was Dr. Clifford, who was registered, but that tley) knew that nearly all the others were not. He hat the British Association could not touch them, as rked for Dr. Clifford. Witness afterwards saw the it Coe.—Mr. Melsheimer then put in the list of regis- entists, to show that the defendants' names did not herein, and in re examination the witness said that the it Huntley said that though he was qualified every ient was placed in the way of Americans practicing in itry.—Mr. Waddy, for the defence, admitted that the its were not registered, but said they could not be, duly qualified. He thought the Act a most mischiev- and that the exclusion of such colleges as those from ie defendants received their diplomas was never inten- ave the effect of preventing them practicing as qualifi- ons in this country. If the British Medical Council ecognise that fact there would be more sense than in aying the part of the three tailors of Tooley-street. ddy then proceeded to argue that the defendants had not offended against the legal intention of the Act by announcing themselves as " D. D. S.," because that was not a recognised "special qualification," and he said that it would be as stupid to take it as meaning that as it would be to assume that a gentleman entitled to put " D. D." after his name announced himself as a capable theologian, or that one writing " M. A.," often a purely honorary degree, after his name was capable of editing a Greek play.—Mr. Bushby reserved his decision.

Mr. Bushby, the sitting magistrate at Worship-street Police Court, London, on Tuesday, delivered judgment in the prosecution of Messrs. Coe and Hunter, summoned as "doctors" of the American Dental Association, 44 Finsbury square, for having within the past six months taken and used the letters " D. D. S.," or some other name, title, or description, implying that they were registered under the Dentists Act, 1878, or were specially qualified to practice dentistry, they not being registered, &c. Mr Bushby said—The question here is whether the defendants, by describing themselves as "doctors of dental surgery" of Pennsylvania University and Boston College respectively, have used titles implying that they were registered under the Dentists Act, 1878, or that they were specially qualified to practice dentistry. In either case since they were not in fact registered, they would be liable under the 3rd section to a penalty of £20. The act seeks to protect the public against quacks and knaves by the following amongst other provisions:—" Persons styling themselves dentists must be on the register, and are liable to be struck off for misconduct. Before being registered they must satisfy the general registrar that they have proper certificates of competency, and only such foreign certificates are admissible for the purpose as are recognised in the list published by the general council." Now, certificates from Pennsylvania University and Boston College are not included in this list. I think, therefore, that the defendants cannot be said to have used titles which implied registration, and the only remaining point is whether the titles imply a special qualification to practice dentistry. It was urged for the defence that the words " specially qualified" must be restricted to recognised qualifications, such as D.

S. of Michigan or D. D. M. of Harvard. But this would ar to cripple the Act, for the only titles verbally specified ne 3rd section are "dentist" and "dental practitioner." nerely substituting such equivalents as dental surgeon or or of dentistry, or, as the defendants done here, doctor of al surgery, the protection to the public would be slight in- l. On the other hand, if the Legislature meant to enforce stration on everyone using a title which implied that he specially qualified to practice dentistry in any way what- , that person would come within the Act as effectually as styled himself a "dentist" or "dental practitioner." latter seems to me the rational view, and I therefore con- the defendants. Mr. Waddy has dwelt on the hardships neir particular diplomas being unrecognised as titles to tration. But, before practicing here, I do not see why should not have qualified by the means open to English ists. Taking into consideration, however, that the clause it have been more clearly expressed—and no question has raised as to the right of the defendants to the designations have adopted, I think it will be sufficient to impose in case a fine of £5 and 2s costs.

The Solicitor for the defendants intimated that he would notice of appeal.

[This discrimination against reputable American Dental ools on account of one year's longer attendance, is simply ulous, and the Judge who tried the case appears to be of opinion by the lightness of the fine he could not help im- ng. With all due respect to the two American Schools gnized in England merely on account of a three year's se, we venture to say that either the University of Penn- nia Dental Department, or the Boston Dental College s more practical and equal theoretical instruction, than r of the two American Schools placed among those recog- l in England.—EDITOR.]

A DOUBLE TRAGEDY.—In a fit of temporary insanity Archibald G. Paddock, a retired New York dentist, shot bullets into the body of his son, and then blew off the top of his own head. Both men died almost instantly. The doctor was well known in New York, having practiced there for many years previous to his coming here. His family consisted of himself, his wife, a young daughter and a boy, Harry 18 years of age.

The father fairly worshiped the son and took him with him everywhere. The boy had recently decided to leave home and had secured a position with a firm in New York, where he was to begin work Monday morning. Dr. Paddock and Harry were both experts in the use of firearms and spent much of their time in rifle and pistol practice. They went out about 9 o'clock in the morning and rigged up a target in the rear of the barn. They had been shooting for an hour, when the doctor was called to the house to pull a tooth. He returned to the target and ten minutes later both he and his son were stretched dead on the field.

There was but one eye witness to the murder, Samuel S. Dauchy, and his rear lot joins that of the doctor. This is the story he tells:

"I was out in my garden picking beans when the shooting was done. I saw the doctor and his son come out, the doctor carrying the guns. I did not notice them particularly because I've seen them shooting at a target several times before. The first I saw peculiar was that the doctor loaded and fired into the ground. He did that, I should think, half a dozen times, then he fired once into the air. It was quite early in the day when that took place, and afterwards I saw the doctor had gone away."

"About 11 I saw Harry moving away from his father. The doctor had his right arm extended, and I presume his pistol was in his hand. I was so startled I did not notice the pistol was pointed right at the boy. There had been one report, and just as I looked the pistol was discharged again and the boy fell. He was only about ten feet away from his father. It was terrible, but what followed was even more frightful. The old man quietly picked up the shot gun, placed the stock on the ground, and laid the left side of his face across the muzzle. How he pulled the trigger I don't know, but there was a loud report, and the old man staggered and fell backward."

hen found both men were lying on the ground about eet apart. Both were dead. Dr. William S. Todd, medical examiner, made an examination of the bodies. were four bullet holes in the boy's body, all from the One had struck the face just below the left eye, and ered the brain diagonally. The other struck further a little to the side of the head. The body wounds the vicinity of the heart, and judging from their gen- ection, had been made while the boy was standing with side towards his father.

. Paddock was born in Putnam county, N. Y., but had nown in Ridgefield for more than twenty years. He a Miss Sproull, of this place, and has lived here a part of the time since. For ten years he was with the Dental association in Cooper Union, New York. He ther-in-law of Dr. J. C. Sproull, the dentist, of No. 667 n avenue, New York. Another brother-in-law is W. nour, a surveyor, of this town. The latter says of the :

he doctor was of an exceedingly nervous temperament ate he had not been very strong. He had never, how- nown the slightest symptoms of insanity. He was in able circumstances and had nothing to worry him. y Harry was his idol. For many years he had been at his elbow, and the two consulted together on every pic that entered into their daily life. The doctor felt homesick to think of his boy going out into the world ay from him. In my opinion this overbalanced his and caused hin to fire the fatal shots."

DOCTOR'S NARROW ESCAPE.—Dr. William Knight, or of anatomy at the Ohio Dental College, had his arm eaten off by a black bear at the Cincinnati Zoological recently. He had thrust his hand through the bars of e to give the bear some peanuts, when the brute seized t with its teeth and bit the hand almost off.

Obituary.

Dr George W. Keely Dead.—Hosts of our readers will receive a shock when they read this announcement.

Dr. Keely was enjoying his usual perfect health until Wednesday evening (August 22), when the accident befell him which caused his death the following Friday afternoon at two o'clock (August 24, 1888). On the evening of the 22d the doctor went up into the third story of the building in Oxford, Ohio, in which his office is situated, to mend the wire of a private telephone connecting his office and residence. The wire could be easily reached with a hoe from a rear window. The doctor sat sideways in the window, with a hoe in one hand and a pocket pen-knife in the other, when, from dizziness or some cause, he fell from the window into a court, some twenty-eight feet below. He must have remained unconscious for two or three hours, when, recovering his senses, he, with great difficulty, was able to crawl to the front of the building on the street, where, in time, he was found by Marshal Kyler, who was patrolling the town. This was about midnight. The doctor was helped to his home, covered with blood and bruises, and, as was found by the surgeon, Dr. Hill, of Oxford, who was immediately summoned, the broken-bladed pen-knife sticking firmly in the skull. This was removed only after considerable difficulty and after the operation of trephining had been performed. The other injuries that were apparent after examination were some bad fractures of the fingers of the left hand and bruises of the head, back and shoulders. Dr. Keely, however, seemed so comfortable at five o'clock on the morning after the accident that Dr. Hill felt secure in leaving him and coming to the city for a couple of days. On Friday morning it was found that some of the ribs had been fractured, causing internal injury, from which the doctor rapidly sank until two o'clock, when he died.

Dr. Keely was in his 65th year, and though old in years igorous in health and intellect as ever He was as tic in his profession, as careful a student, as thorough mentor, as anyone could be in the beginning of a pro- career. His name is known wherever "American " is known, any where in the world. He has held st places in the dental societies of which he has al- n an active member. At the time of his death he office of Treasurer of the American Dental Associa- h met in Louisville, Ky., and the doctor had prepared that meeting.

in Oxford, Ohio. and keeping his residence there all ithin a stone's throw of the old homestead, the doctor ne so identified with the town for half a century that y of Oxford could be complete without constant refer- he acts of kindness and usefulness and unselfish work art of Dr. Keely for the benefit of his native village. trustee of the Ohio Dental College of Cincinnati, and ctive in its councils. He was a lecturer in the college ecial branch, and has held many hundreds of students terested in his lectures. A good man, a useful man, d genial man, a man whom everybody loved, has Ve shall not meet his like again.

town of Oxford and the societies and institutions of e doctor was a member will, in due time, memorialize aking away. C. M. W.

—*Cincinnati Medical Journal.*

Ionthly Summary.

YTHROPHLÆINE AS A LOCAL ANÆSTHETIC.—Dr. oller has made some experiments with this substance, s that for some minutes after its application it produces ection of the conjunctiva. When this has passed away the conjunctiva is quite insensible to touch or pin pricks, which lasts for several hours. This is followed by a cloudiness of the cornea, which continues for several days.—*Physician and Surgeon.*

EPISTAXIS: LEMON JUICE.—M. Geneuil (*Rev. sanidad militar.*), Madrid, for the past twelve years has employed injections into the nares of freshly-expressed lemon juice in rebellious cases of epistaxis depending upon disease of the liver and heart, and has never known it to fail in checking the hemorrhage, even after all ordinary means were ineffectual. He recommends it especially in children, who are much more difficult to tampon than adults. He first by means of a small urethral syringe, washes the nostrils free from coagula with water, and then injects freshly-prepared lemon juice. He rarely has to use more than one injection; but should the epistaxis not have ceased in two minutes, he repeats it. These results are not obtainable with a concentrated solution of citric acid. He considers this method as efficient, or even more so, than that of Verneuil's, which consists in bleeding from the hepatic region and it has over the latter the advantage that it is less difficult of application.—*Polyclinic.*

TREATMENT OF BURNS.—Nikolsky claims to have had excellent success in the treatment of burns of the second degree with fomentations of the following:

Tannin.
Alcohol (95) aa 4 grammes.
Rectified sulphuric ether 30 grammes.

The dressings are repeated two or three times a day. After the ether evaporates there remains a fine pellicle of tannin that causes prompt sedation of the pain and inflammation. The cure takes place much more rapidly than under the employment of collodion and other remedies in common use. The first dressing should be preceded by an antiseptic washing of the affected parts. The bullæ are punctured to allow the serum to escape, and the denuded surfaces are then powdered over with iodoform in a thin layer, and then dressed with the ether tannin.—*Journal de Medicine de Paris.*

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l hold Clinics and deliver Clinical Lectures.

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ntal School, until now its graduates, in almost every part of the civilized
ting with the success that ability will ever command. The past session
uccessful one in number of matriculates ever held; and visiting dentists
of this country have expressed themselves as being astonished and grati-
bility shown by the students when operating upon patients in the
rming one of the departments of one of the oldest Universities in this
ploma is everywhere recognized and honored.

ction in both operative and mechanical dentistry is as thorough as it is
ke it, and embraces everything pertaining to dental art. The advantages
eral and oral surgical clinics, to which the dental students are admitted,
l the lectures of the University, afford, cannot be overestimated. The
ds of patients annually treated in the University Hospital, which is well
he largest Hospital in Baltimore, afford an abundance of material for
rmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge,**) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or **Winter** Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular** or **Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session,** for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10

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The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

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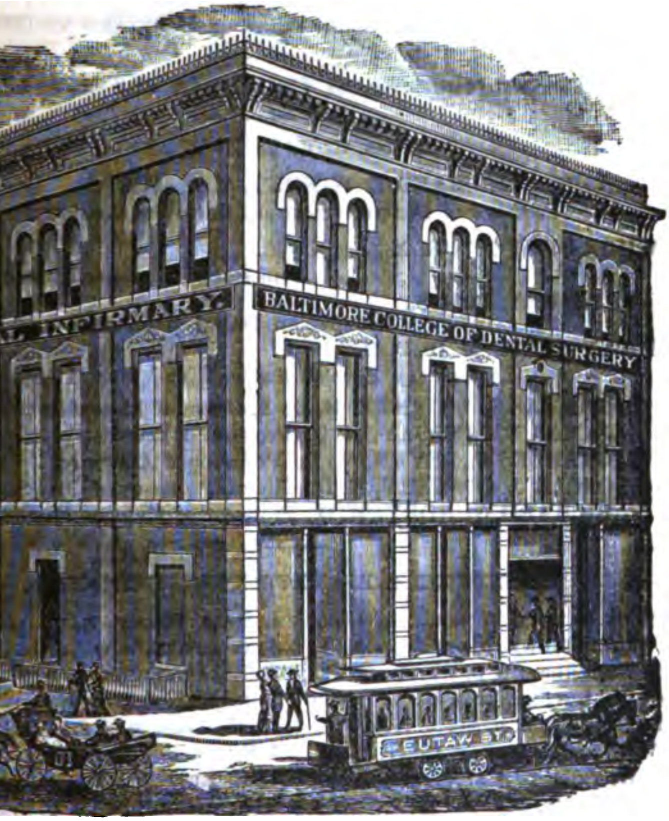
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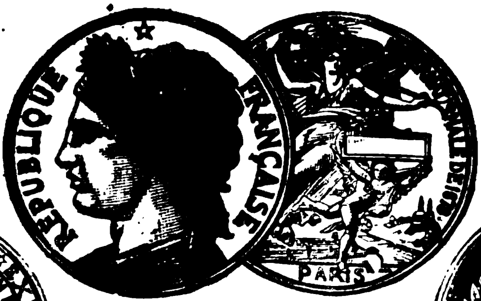
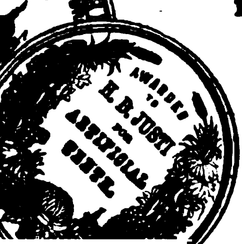


PARIS, 1878.



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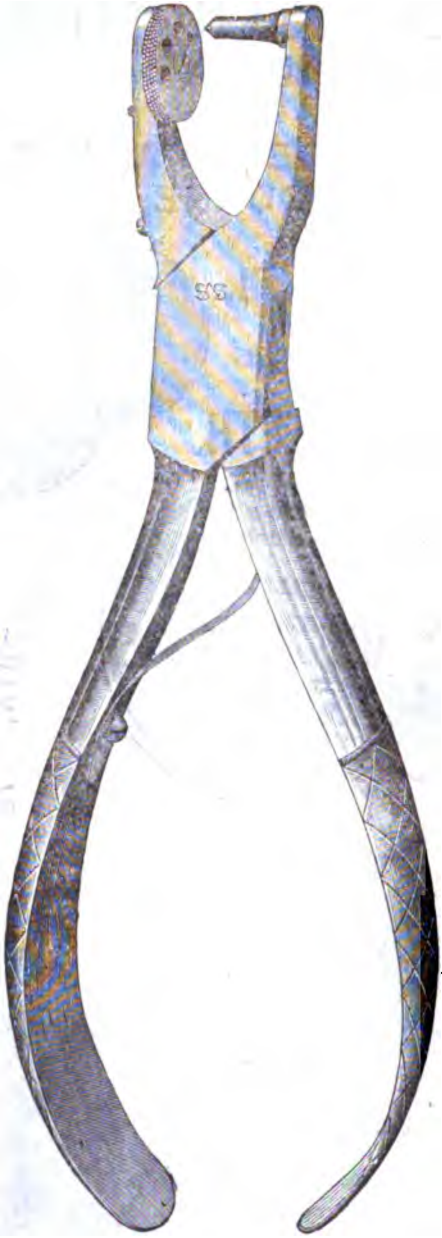

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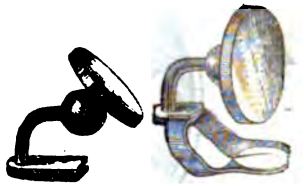

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We beg leave to call the attention of the Dental profession to the fact tha our business was established in 1849, and has been strictly confined to purify- ing and hammering metals. With this experience we feel justified in assertin that any article we put upon the market should certainly have the merit whic we claim for the above articles of manufacture.

We claim for our foil that it is made of ***absolutely pure*** gold, and beaten with the greatest care to produce uniformity and toughness, never losing sigh f quality for the sake of cheapness. The best makers have demonstrated tha ***absolutely pure*** gold cannot be made ***cheap***.

Our Extra Dry Alloy and Improved Amalgam are composed of entirel pure metals, fused and mixed with the greatest care consistent with a view t produce the general effect to be desired in all Amalgams. They contain n ***Cadmium*** or ***Zinc***.

We will cheerfully extend every facility to anyone desiring to test them t their fullest capacity, and most respectfully invite a trial.

These fillings can be obtained at any first-class Dental depot, or directl rom our house at the following rates:

Soft and Cohesive Foil....................	$30 00	per oz.
" " " "	15 00	" ½ "
" " " "	7 50	" ¼ "
" " " "	4 00	" ⅛ "

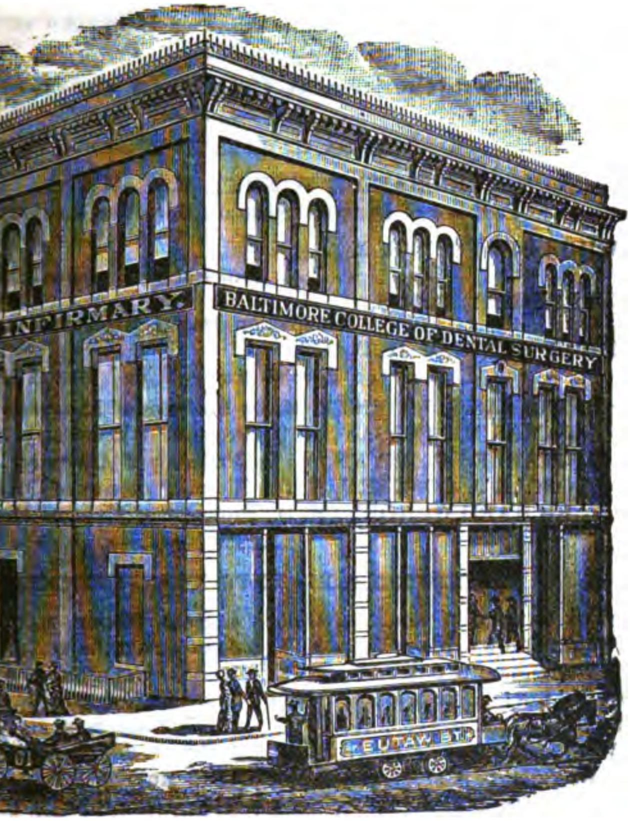
Eureka Gold Filling at same rates

Extra Dry Alloy..........................	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam......................	2 50	per oz.

All goods can be returned if not as represented.

For Sale By - **SNOWDEN & COWMA**

re College of Dental Surgery.


INFIRMARY.
BALTIMORE COLLEGE OF DENTAL SURGERY
EUTAW ST

titution was chartered in 1839 by an Act of the General
Maryland, and is the oldest and most widely known
ge in the world. The majority of the eminent prac-
dentistry in this country and Europe are graduates of
e College. The College Building is one of the largest
ructures of the kind in this country, and the collection
in the Museum cannot be excelled. The number of
y visiting the Infirmary has been so great that the
been compelled to add additional space and chairs to
large and well-arranged Operating Hall. All such
operated on by the students, under the careful super-
Professors and Demonstrators.

nual Course of Instructions will commence on October
, and continue until the beginning of March following.
ks of the Session are devoted to Lectures on practical
cially the "Filling of Teeth," and Construction of Arti-
Clinics, Infirmary Practice and Demonstrations.

CHARLES ABBEY & SONS,

MANUFACTURERS OF

DENTISTS' FINE GOLD AND TIN FOIL.

The attention of Dentists is invited to our FINE GOLD FOIL. which is prepared under our constant personal supervision. Our Nos. are 4, 5, 6, and 8.
We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5, and 6.

ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, prepared expressly for the purpose, with great care, by ourselves.

ADDRESS— **CHARLES ABBEY & SONS, Philadelphia**

LUKENS & WHITTINGTON,

ESTABLISHED 1866.

MANUFACTURERS OF

DENTAL INSTRUMENTS

And Dealers in Dental Supplies,

WHOLESALE & RETAIL,

626 RACE STREET,
PHILADELPHIA, PA.

WE desire to mail a copy of our new circular and prospectus to every reader of the AMERICAN JOURNAL OF DENTAL SCIENCE. If you have not already received a copy, send us your name and address plainly written on a postal card. Address

BEECHER & CO.,

42 THIRD AVENUE. NEW YORK.

DR. GENESE'S

Separating Steam Cured Rubber Strips,

—FREE FROM ODOR,—

Made from Pure Para Rubber,

FOR SALE AT ALL DENTAL DEPOTS.

X WORLD'S FAIR MEDALS
OF THE
EST ORDER OF MERIT
AWARDED FOR SUPERIORITY
—AT—
, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,
—TO—
H. D. JUSTI,
IN COMPETITION
WITH THE BEST MAKERS
—OF—
PORCELAIN TEETH.

WILLIAM VALLEAU, JR.

MANUFACTURER OF

SOFT AND COHESIVE

GOLD FOIL,

EUREKA GOLD FILLING,

Extra Dry (Gold & Platina) Alloy, Improved Amalgam, &c.

506 BROOME STREET, - - - N. Y. CIT

We beg leave to call the attention of the Dental profession to the fact t our business was established in 1849, and has been strictly confined to pur ing and hammering metals. With this experience we feel justified in assert that any article we put upon the market should certainly have the merit wh we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and bea with the greatest care to produce uniformity and toughness, never losing si f quality for the sake of cheapness. The best makers have demonstrated t *absolutely pure* gold cannot be made *cheap*.

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Eureka Gold Filling at same rates

Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

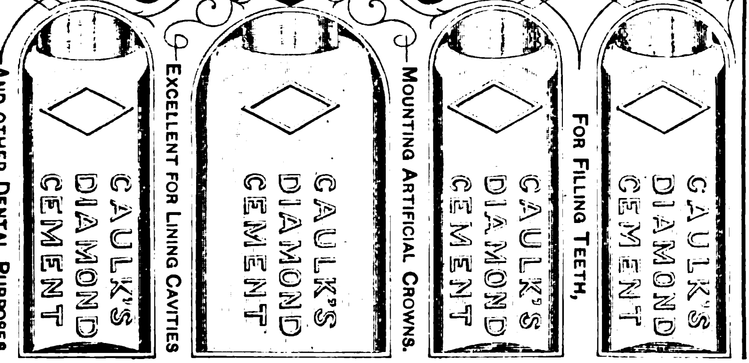
All goods can be returned if not as represented.

FOR SALE BY - SNOWDEN & COWM

LK'S FILLING MATERIALS.

ESTABLISHED 1877.

LK'S TRADE DIAMOND MARK CEMENT



YELLOW.	LIQUID.	MEDIUM.	LIGHT

nd LIQUID.—Gray, Yellow, Medium and Light, - $2.00 per Package.
" " —Gray and Yellow, - - - - - - - 1.50 " "
" " —Gray, Yellow, Medium, Light or Gum, - 1.00 " "

Compound Stands Without a Rival.

TEN YEARS BY LEADING DENTISTS THROUGHOUT THE WORLD.

CEMENT Should not be classed with the so-called oxy-phosphates, as is often the case—the materials of which it is composed and its process of manufacture being entirely different—hence its **Superiority.**

WATER OR SALIVA. Two or more colors blended together (in mixing) will produce any shade desired.

ULK'S PAR-EXCELLENCE ALLOY.

nd Platina Alloy is manufactured on a new principle. Saves teeth l. It is the result of a long series of experiments, and has been in TEN years. By our NEW METHOD of manufacture there is no GUESS lecular change is controlled, making each and every ingot always ike in its properties.

and 1 ounce packages, per ounce, $3 00; two ounces, $5.00.

CAULK'S WHITE ALLOY

improved. There is nothing equal or superior to it. Is of a peculiar or. When properly manipulated with our Purified Mercury it will nder all circumstances.

and 1 ounce packages, per ounce, $4.00; two ounces, $7.00.

d Point Stopping and Gutta-Percha Points for Filling Roots.

Gutta-Percha having been in the market for several years, has stood of all—that of time. The Stopping is put up in sealed envelopes, Cylinders and Points in sealed boxes, bearing a fac simile of our

, ½ and 1 ounce packages, per ounce (reduced to) $2.00.

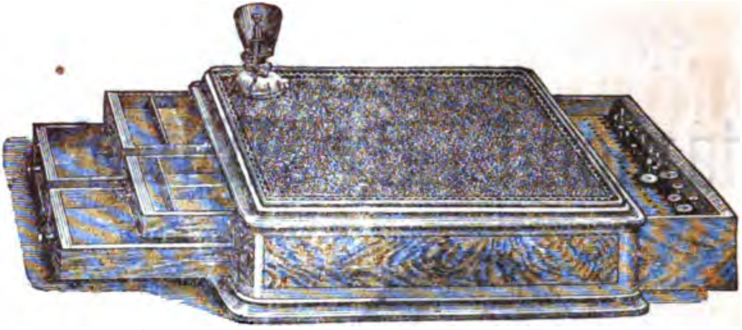
f Caulk's Filling Materials are sold by Troy Weight and sent by mail.

ts are using these Materials throughout the World. What bettdr evidence do you wish of their Superiority and Excellence?

ers for Dental Supplies will receive prompt attention.

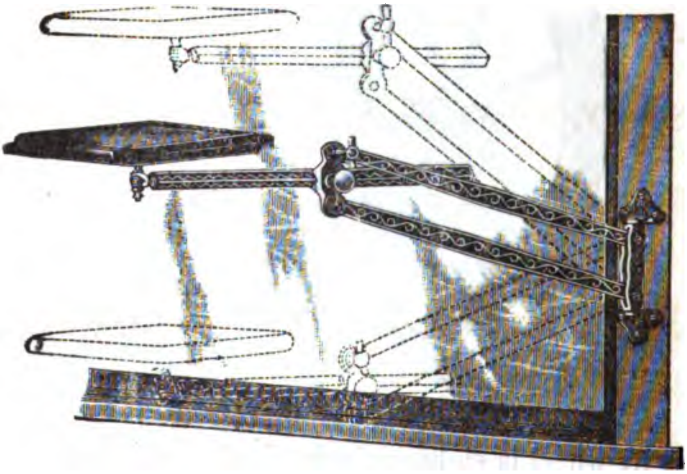
L. D. CAULK, Manufacturer, CAMDEN, DELAWARE.

ALLAN TABLE.



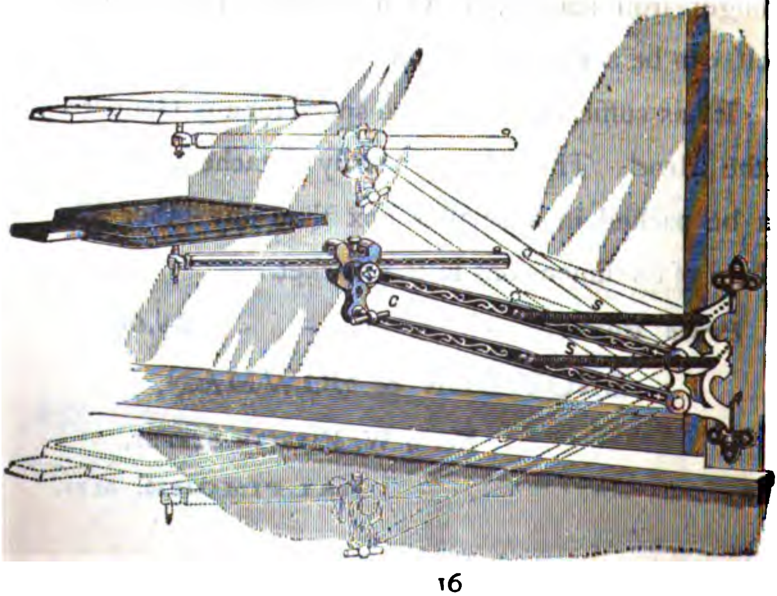
VENEERED SIDES, - - $9.00

STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides In and out. Black Walnut Table with two drawers.

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel

orrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

ite's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

OLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

——THE ATTENTION OF——

estern and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

eful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

terly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

PURE GOLD FOIL,

MANUFACTURED BY

J. M. NEY & CO.,

HARTFORD. CONN.

SOFT, TOUGH AND MALLEABLE

CAN BE MADE AS ADHESIVE AS DESIRED BY RE-ANNEALING.

Receives our personal attention in refining.

FOR SALE BY - SNOWDEN & COWMAN, BALTIMORE, MD.

AND DENTAL DEPOTS GENERALLY.

Jacob J. Teufel & Bro.

DENTAL

FORCEPS

A SPECIALTY.

MEDAL AND DIPLOMA AWARDED BY THE

Centennial Commission, 1876.

114 South Tenth Street,

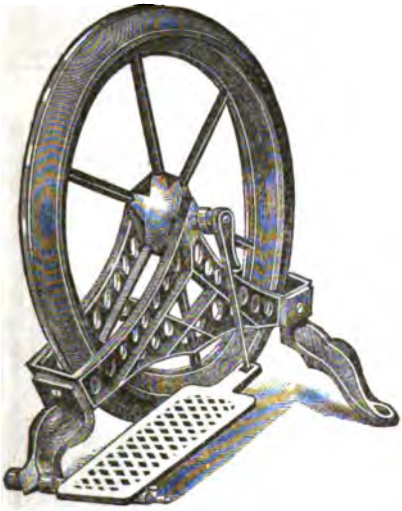
PHILADELPHIA.

All Our Forceps are Warranted.

FOR SALE BY SNOWDEN & COWMAN

NOWDEN & COWMAN'S

nond Fly Wheel,



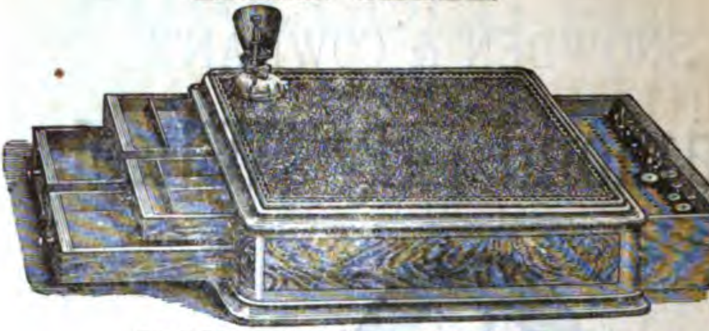
ly-wheel is eighteen inches in diameter, with
ron spokes, in an iron frame, complete in
be set anywhere, and runs very steady.
sufficient power and speed for any Dentist's
ad. The feet are easily detached, and all
cked in a smaller box than any other Fly
ts dimensions in the market.

Boxed, - - - - - *$8.00*

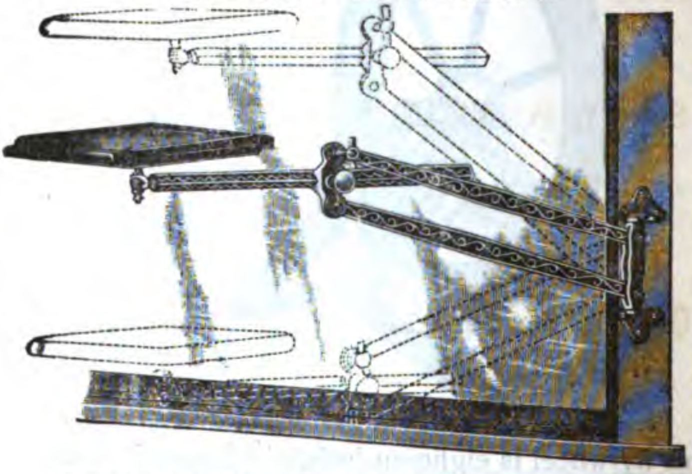
SNOWDEN & COWMAN,

No. 9 W. Fayette Street,
BALTIMORE, MD.

ALLAN TABLE.

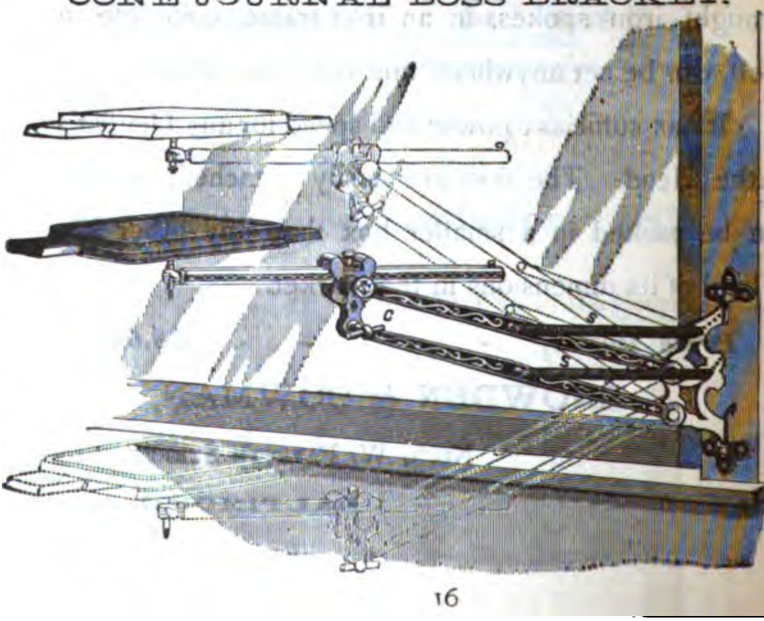


STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers. VENEERED SIDES $9.00

CONE JOURNAL BOSS BRACKET.



Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

Western and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

Careful Attention Given to the Smallest Order.

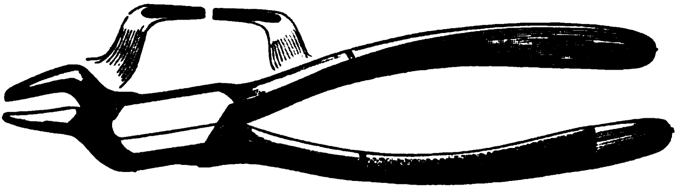
—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from bes quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.2

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, -	$2.0

ARTICULATORS

From - - - - - -	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - -	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - - -	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound, - -	1,25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ouuce, - -	$4.00
Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	
Caulk's Diamond Pellets, per ounce, - - - - -	$4.00
Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - -	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - -	$4.00
Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.	

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD
RESULTS USE THE
BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼. ½ and
1 oz. p'k'gs. Each
package warranted
as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED

—BY—

cago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN

9 W. FAYETTE STREET, Baltimore, Md.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE.	15 Cts.	10 Cts
For $15 00 net Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN
RETAIL PRICE,	15 Cts.	10 C
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of th following makes, viz:

Gideon Sibley's

—AND—

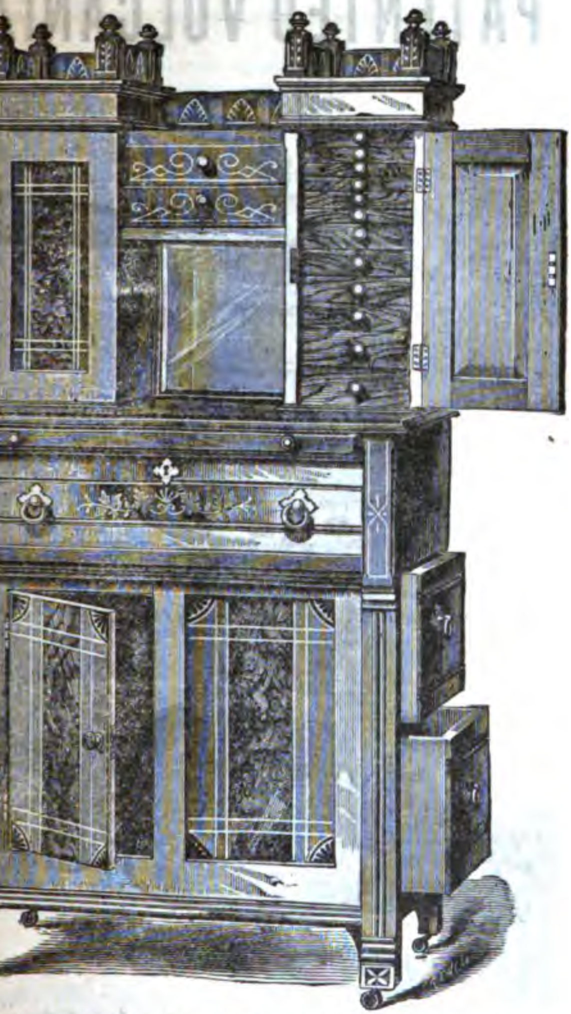
The Wilmington Dental Manfacturing Co

Price per. set of 14,	$ 1 0
" 11 " "	10 0
" 29 " "	25 0
" 60 " "	50 0
" 92 " "	75 0
" 125 " "	100 0

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMORE

oved Cabinet Case No. 10.

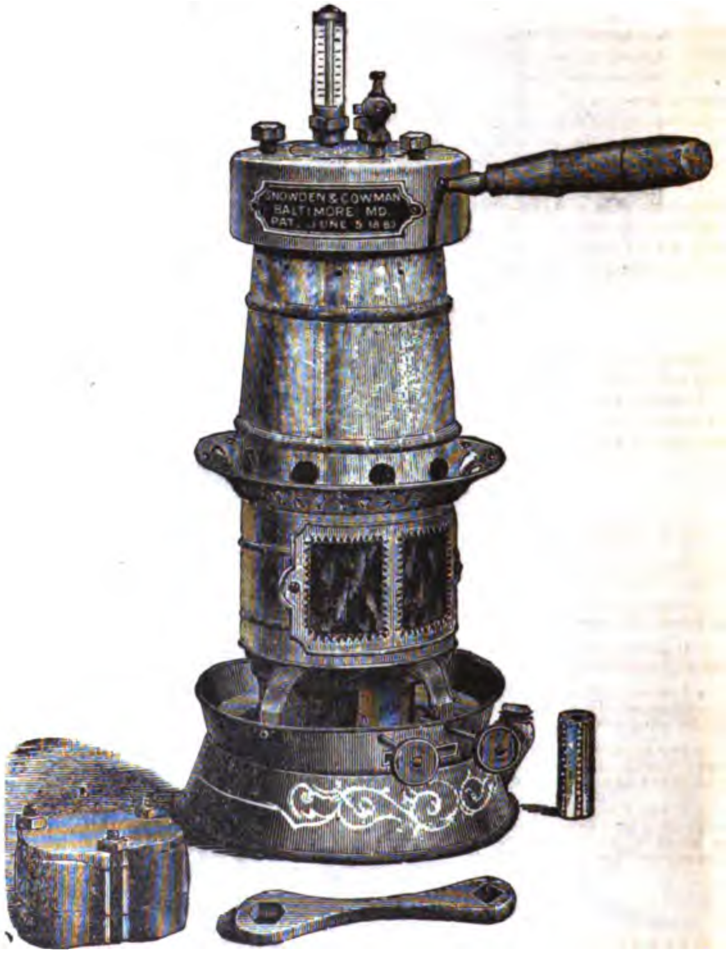


Case is made of black walnut, hard oil finish. The panels are
and the mountings are all nickel plated. The total height is
width 31 inches; depth 20 inches. The upper portion has 12
; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches
closes over all these drawers. On the opposite side is space
adjustable shelves for medicines. Connecting the two parts
awers, 10¾ x 12½, by 3 inches deep. Below these drawers is a
mirror, 10 x 10. The lower portion contains one drawer in
inches deep, with slide drawer over it 25 x 16⅓ by ½ inches
felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep.
set, 20 x 16, 12 inches deep, with shelf.

E, with Wood Top (Boxing Free) - -	$45.00.
With Italian Marble Slab, (white) -	50.00.
" Knoxville Marble, (pink) -	50.00.

Ianufactured by RANSOM & RANDOLPH, Toledo, Ohio,
29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

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Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

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Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED
—BY—

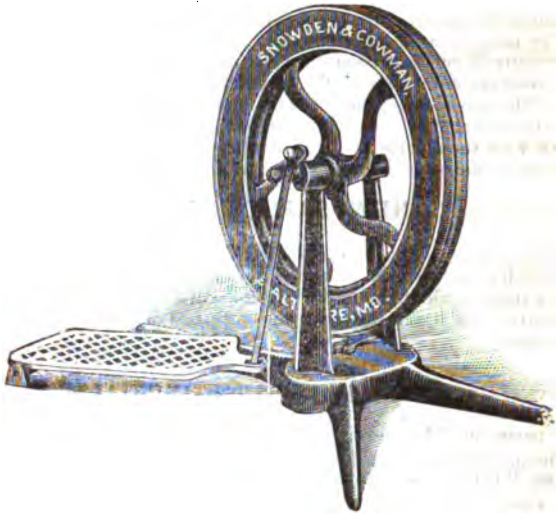
Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.
BALTIMORE, MD.

This Fly Wheel weighs 30 lbs., with diameter o wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is ver light running. In boxing remove pin that connect treadle with rod and fold treadle by side of the wheel Weight complete, 46 lbs.

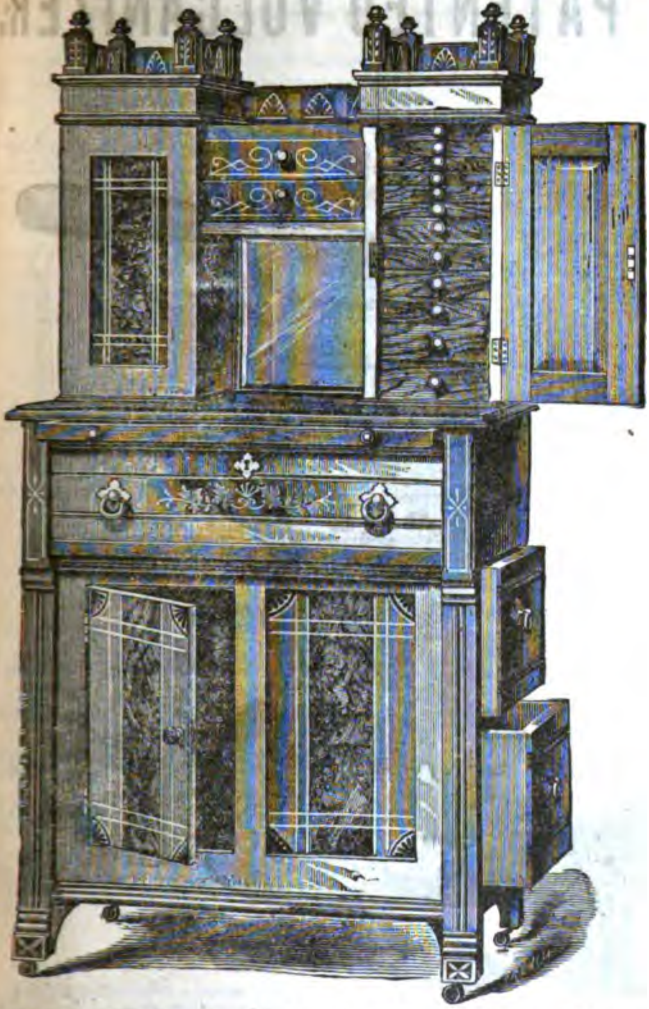
Price Boxed, - - - - - - **$8.0**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD

Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are rench veneer, and the mountings are all nickel plated. The total height is feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 rawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches eep. A door closes over all these drawers. On the opposite side is space ame size, with adjustable shelves for medicines. Connecting the two parts bove are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a eveled plate mirror, 10 x 10. The lower portion contains one drawer in ront, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches eep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. front is a closet, 20 x 16, 12 inches deep, with shelf.

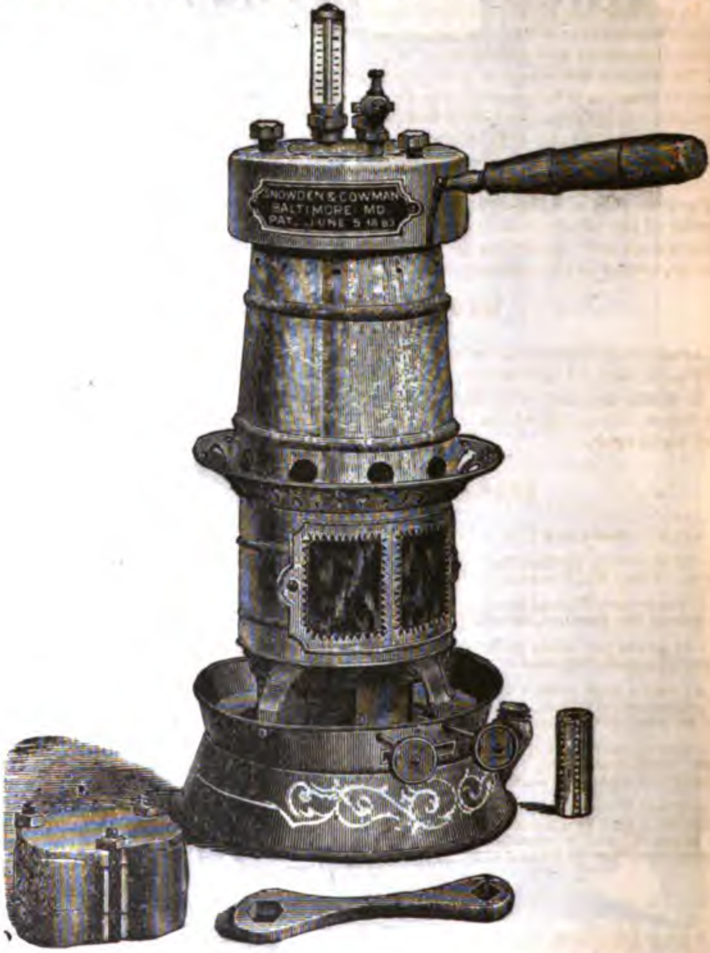
PRICE, with Wood Top (Boxing Free)	- -	$45.00.
" With Italian Marble Slab, (white)	-	50.00.
" " Knoxville Marble, (pink)	-	50.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

NCH: 29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S

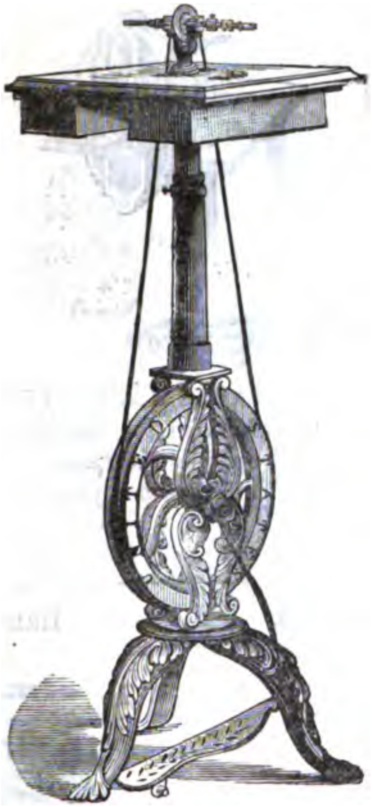
NEW PATENTED VULCANIZER



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

TED STATES LATHE.



to the dentist a most complete FOOT LATHE for grinding
olishing plates.

n gotten up in a superior manner, great care having been taken
lurable and efficient. It has a movable column and table, which
f being elevated eight inches, to accommodate the operator in
ng or standing posture.

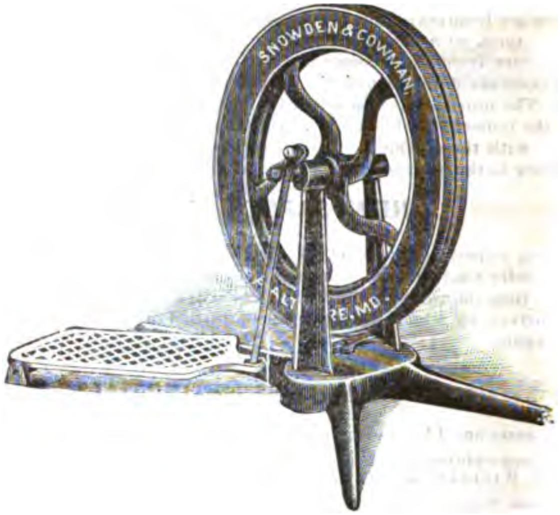
packed in a box sixteen inches square, and can be set up in a
, presenting a very neat and pleasing appearance, suitable for
laboratory. It is finished in bronze, and runs very light and

the complete with Short Spindle, as per cut, - -	$16 00
" " Long " - - -	16 00
nd only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

SNOWDEN & COWMAN'S

*FLY WHEEL, No. 1, New


SNOWDEN & COWMAN.
BALTIMORE, MD.

This Fly Wheel weighs 30 lbs., with diamete wheel 15 inches. The stand is the stiffest and stead of any driving wheel in the market. Owing to position of the feet and the peculiar arrangement of treadle, The wheel has an immense power and is v light running. In boxing remove pin that conn treadle with rod and fold treadle by side of the wh Weight complete, 46 lbs.

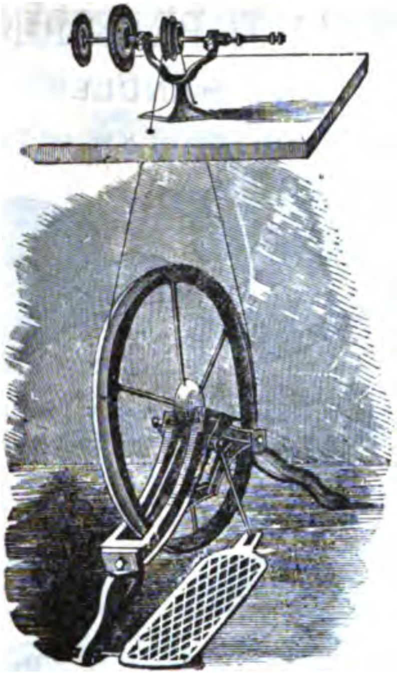
Price Boxed, - - - - - - $

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE,

Diamond Fly Wheel and Lathe Head.



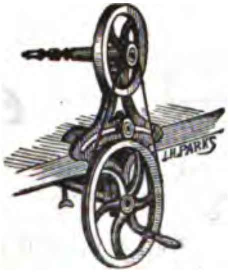
DIAMOND FLY WHEEL.

-wheel is 18 inches in diameter, with wrought iron spokes, in an
e, complete in itself, can be set anywhere and runs very steady.
ICE..$8 00

DIAMOND FLY WHEEL AND HEAD.

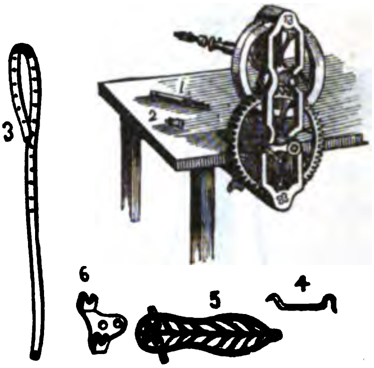
boxed..PRICE $14 00

UADRANT FLY WHEEL LATHE.



ns of the quadrant, the spindle can be raised from, or lowered to
and thrown from or nearer to the operator. The cord is tightened
nd the lathe is silent; the spindle is of the best quality of steel
s washers and two chucks complete. Weighs only four pounds.
ICE..$4 50

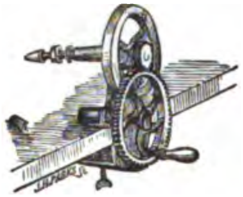
Portable Hand or Foot Lathe.



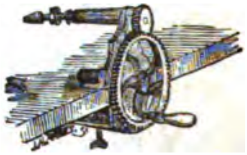
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



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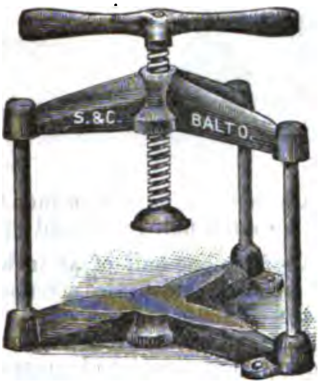

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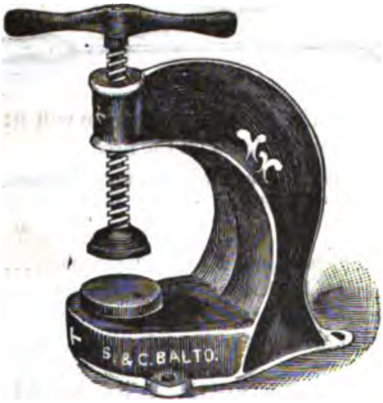

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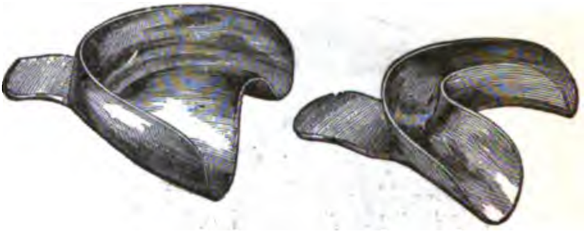

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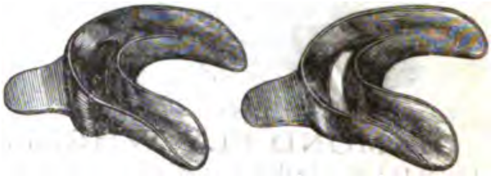

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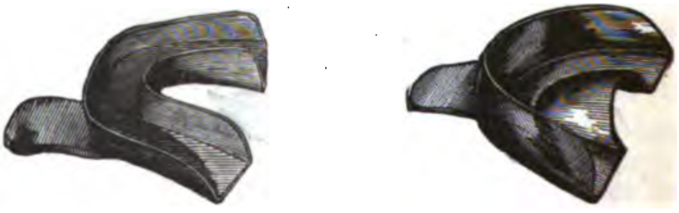

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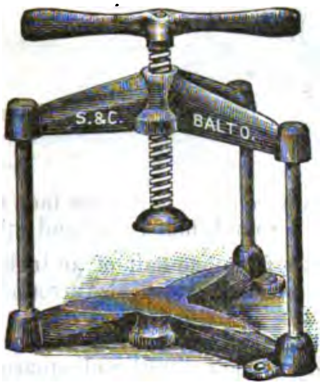

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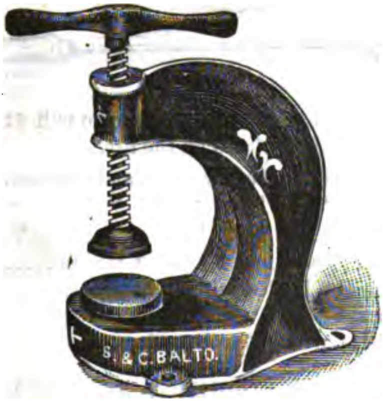

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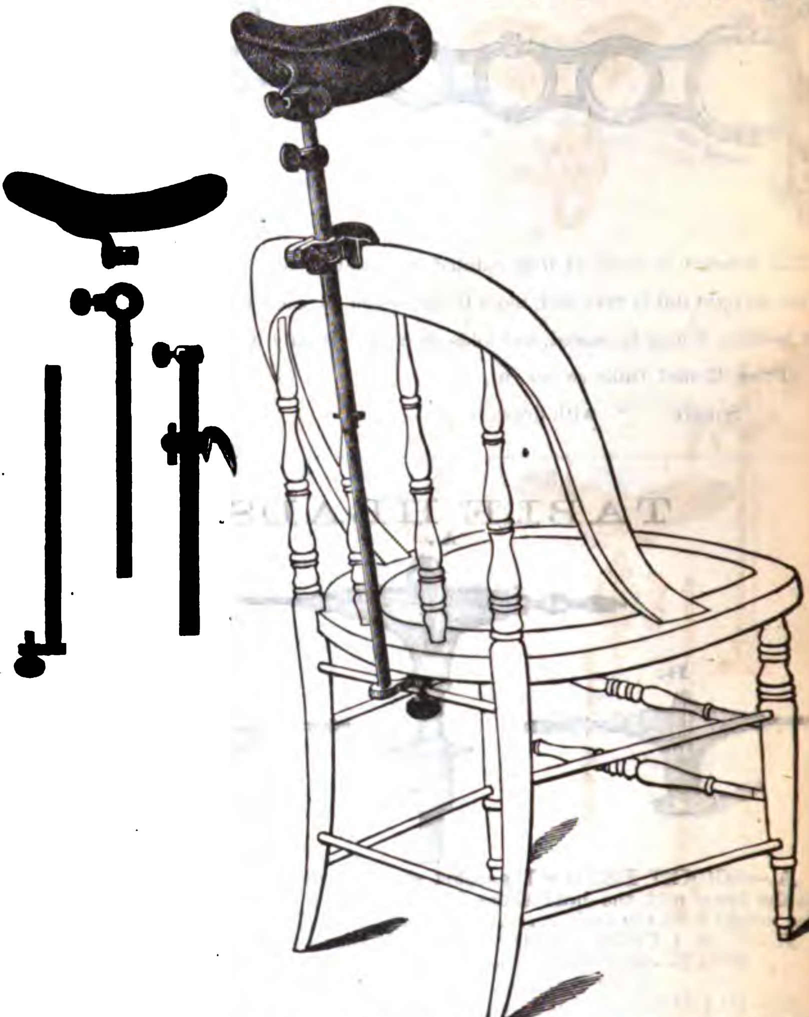

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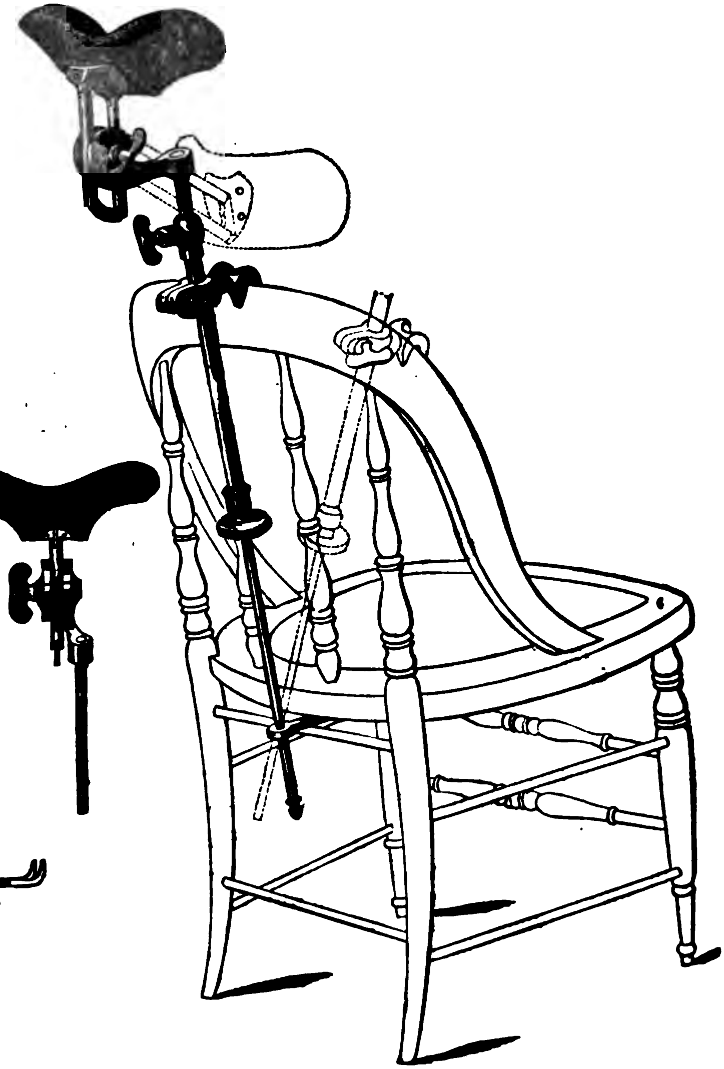

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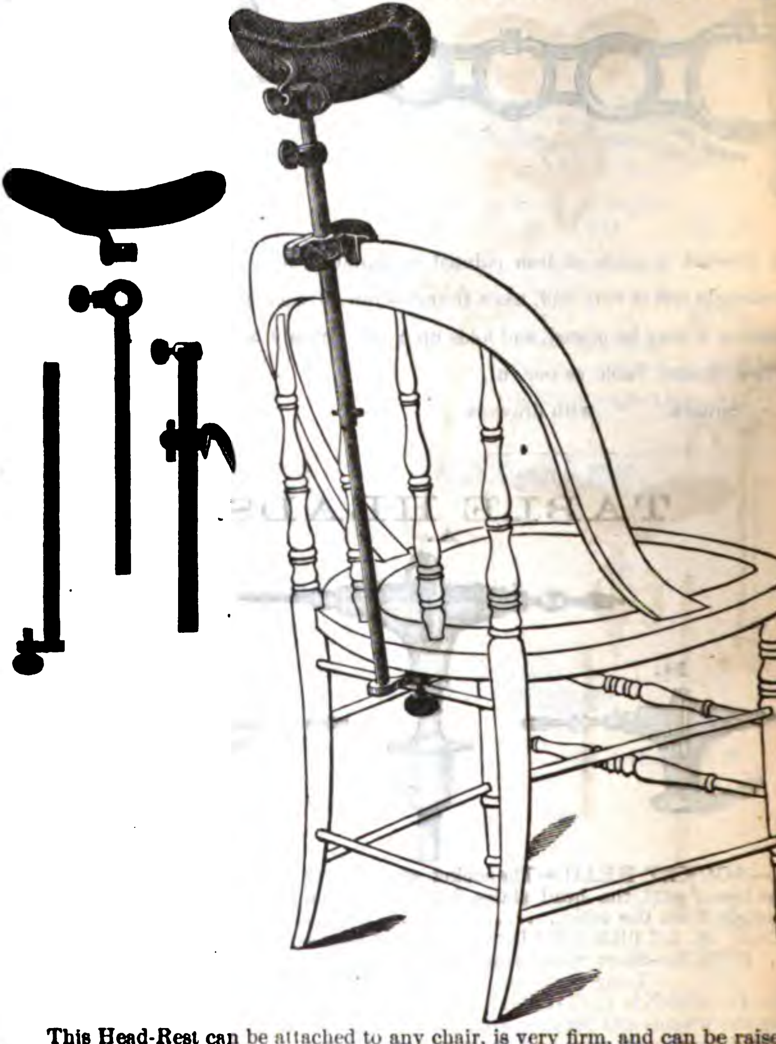

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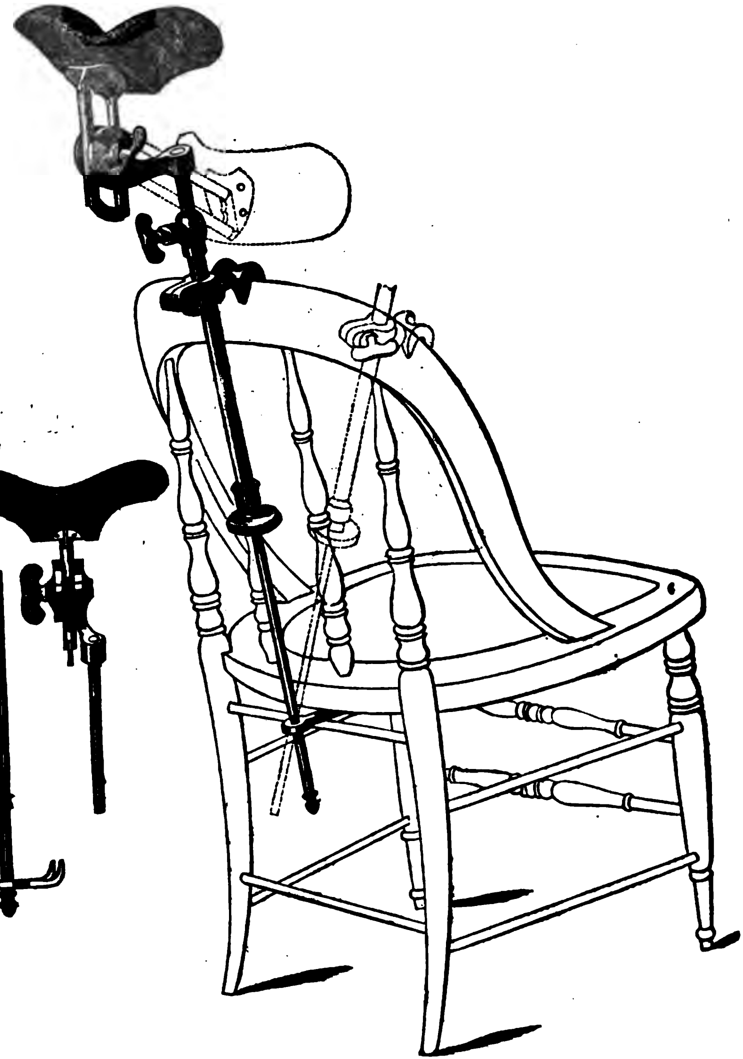

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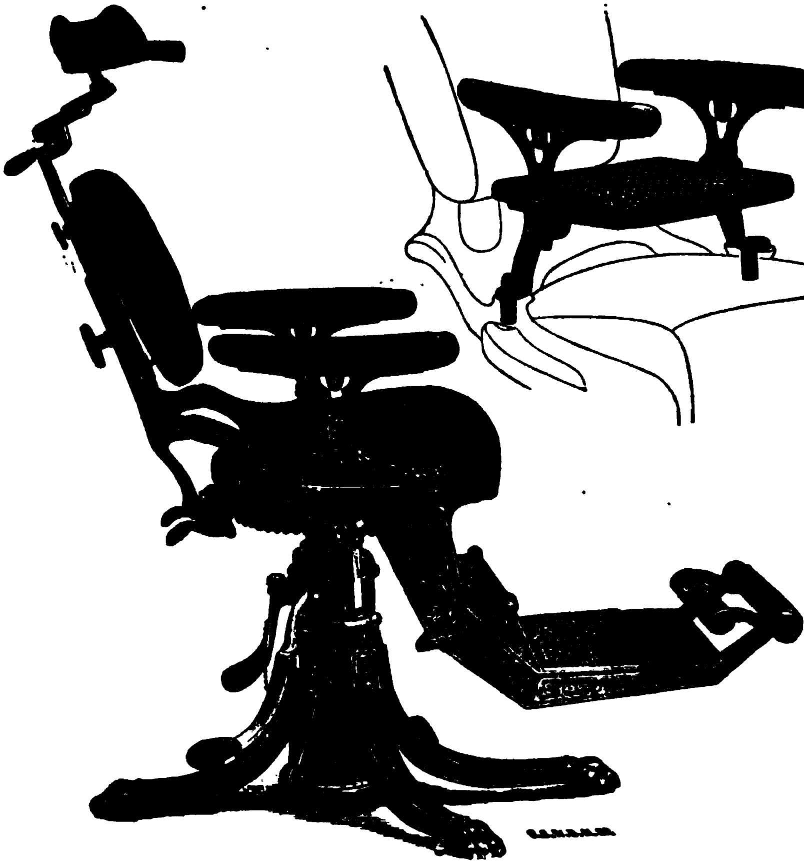

Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; Ma
19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

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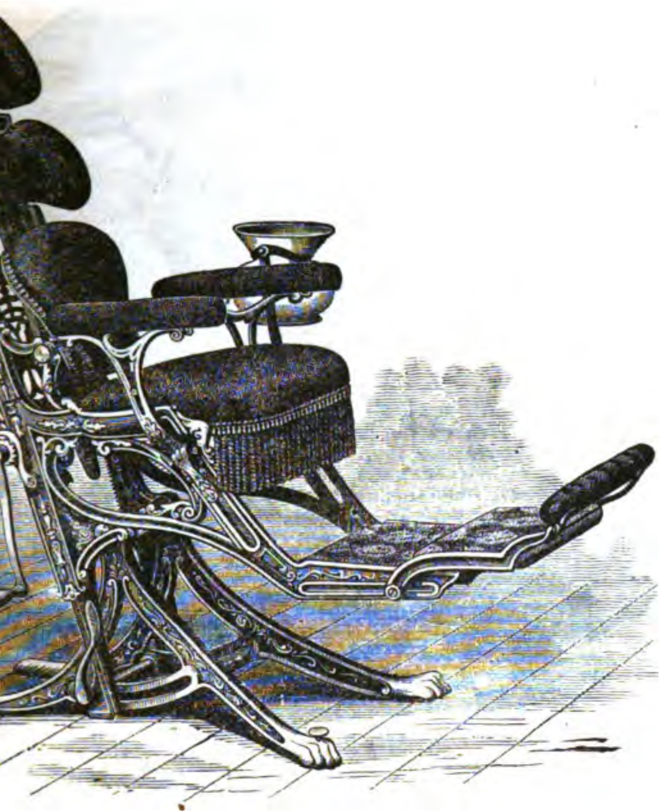

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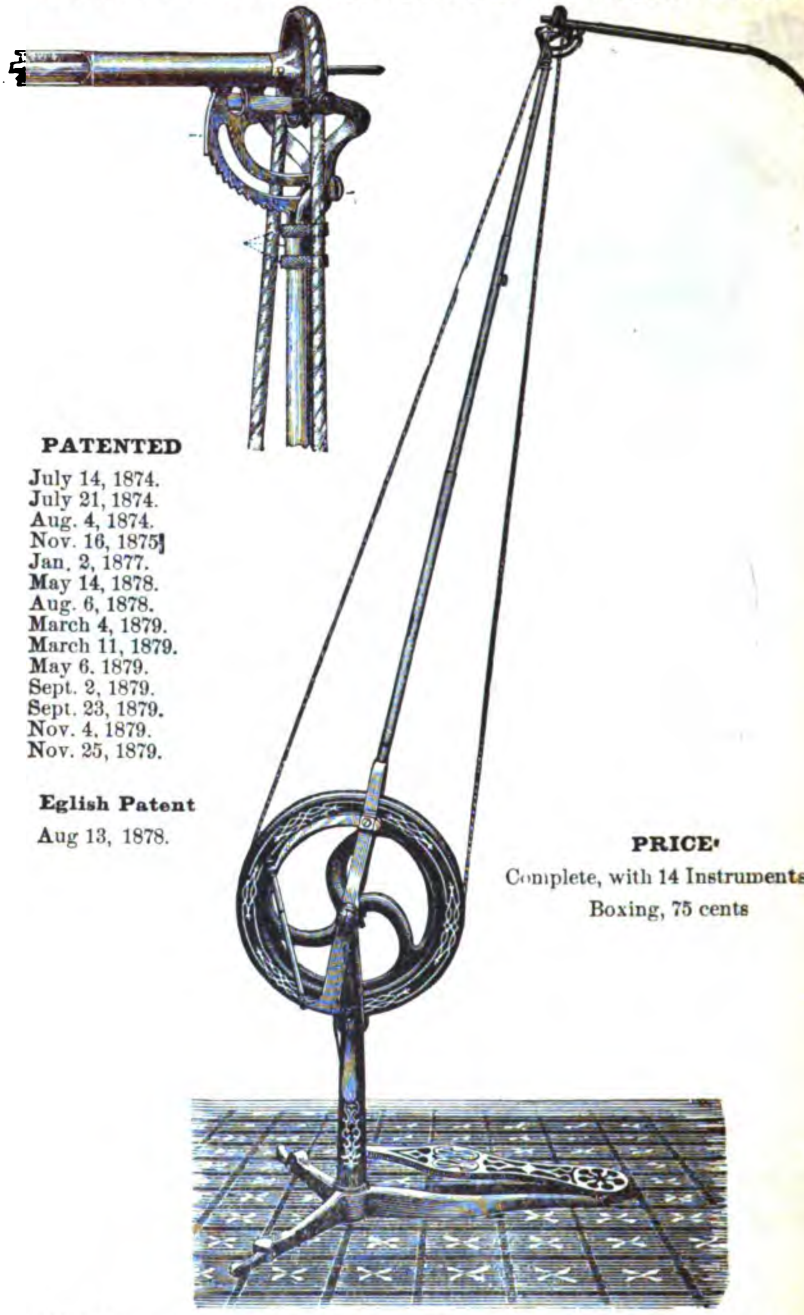

PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
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May 14, 1878.
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March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
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Aug 13, 1878.

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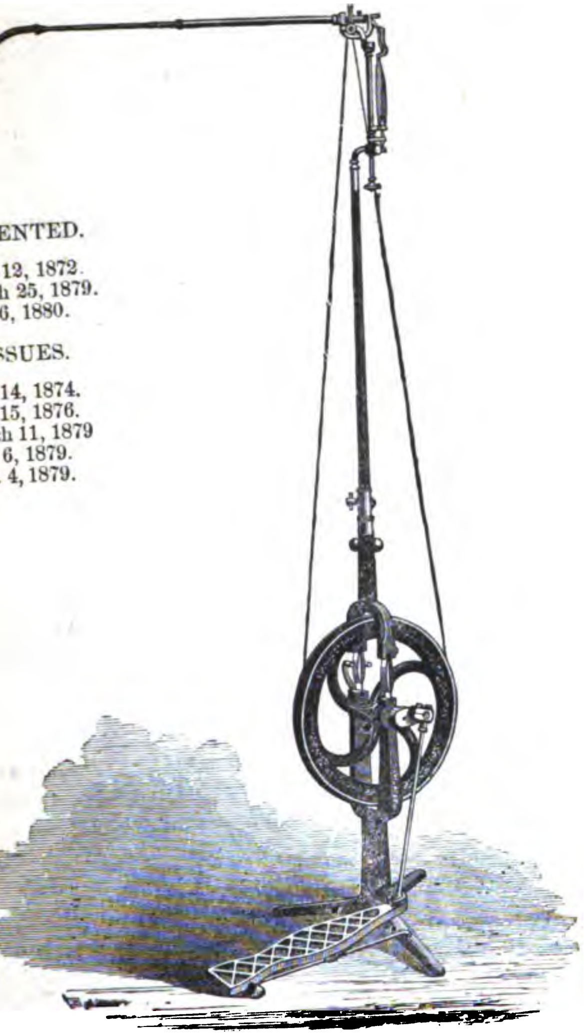

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12, 1872.
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XXII. Third Series—OCTOBER, 1888. No. 6.

ARTICLE I.

SOME AFFECTIONS OF THE GUMS.

ANK LANKESTER, L. R. C. P., M. R. C. S., L. D S. ENGLAND.

/e will now pass on to consider some of the *constitu-*
affections, and will take, first, that somewhat rare
on known as *Purpura hæmorrhagica*, in which disease
ms are more or less affected. It requires medical
ent, so I will not do more than mention it here. It
chiefly in the young and debilitated, and is charac-
by extravasations of blood in the form of red points
echiæ beneath the skin and mucous membranes, in-
g the tongue, lips and gums. These resemble some-
he small extravasations of blood that one not infre-
y sees after having had the skin pinched unpleasantly
as with a pair of pliers, &c. There is always a ten-
to hæmorrhage from all the mucous surfaces of the
and it is only its rare occurrence that makes the dis-
omparatively unimportant. It may prove serious

from the persistance of the hæmorrhage and the difficulty c arresting the same.

Another disease now happily also rare is *True Scurv* in which also we find extravasations beneath the gum At first, merely the edges of the gums become somewha swollen; the condition increases and lobulated masses forn and rise up around and between the teeth, so that the latte may even be hidden. The gums get very spongy, insensitive, and of a blotchy deep red or livid colour, and the are very apt to bleed; indeed, in severe cases blood ooze continually from the gums. Ulceration and sloughing ma supervene, and lay bare the necks of the teeth. Th latter may get loose and fall out. The breath is generall very fœtid and there is a liability to submucous hæmorrhag It occurs chiefly in navvies who live badly and take bu little vegetable food. The *treatment* belongs to the genera practitioner, and consists first in remedying the caus whilst locally antiseptic and astringent mouthwashes wi help the swollen state of the gums to quickly subside.

There is another condition of the gums known a *False scurvy*, which is frequently met with in persons wh neglect to clean their teeth, and are in feeble health. Salte describes it as consisting essentially of a vascular dilatio of the papillary and other capillaries, with a general thickening of the gum itself. It is a condition that can soon b remedied by improving the health and the use of a toothbrush with astringent mouth-washes to get the mouth an teeth clean and sweet. The gums will then soon resum their normal appearance.

Addison's Disease we will briefly consider. It is a comparatively rare disease and is characterised by various nervous and dyspeptic symptoms, together with an ever-increasing debility and a most renarkable pigmentation o bronzing of the skin and mucous membranes. The skin especially on exposed surfaces, assumes a deep brown mulatto tint whilst on the tongue, gums and buccal mucou membrane there are found irregular patches of pigmenta

f a dark brown or blackish colour, and which are
haracteristic of the disease, and could not well es-
e notice of anyone examining the mouth. It occurs
in males between ten and fifty years of age, and it
ends fatally, and commonly within a year. The
nt is purely palliative. I merely mention the dis-
re to-night as a rare abnormal condition of the gums,
riosity, so to speak.

have mentioned four metallic poisons that exert an
e on the gums. We will take *Mercurial Poisoning*
Mercury enters the system very readily, both by the
h, skin and the lungs. It is taken very largely as a
e, and is much used in various Arts and manufac-
uch as glass, &c., &c. Hence we not infrequently
ith cases of mercurialism, *i. e.*, mercurial poisoning.
the earliest indications of this is its effect on the
which generally give the first token in the form of a
running along their margins; this is soon followed
h tenderness, swelling and pulpy thickening of a
d colour first appearing around the incisor teeth.
ms finally retract from the teeth, the tongue becomes
and furred and the breath fœtid. There is, too, a
taste present in the mouth. Besides this there is
r less profuse salivation, and the glands themselves
swollen and painful. If the inflammation goes on
on may supervene and large portions of the gums
eks may thus be destroyed. The teeth will become
nd fall out, and the maxillæ even carious. The
nt belongs to the surgeon or physician. The ad-
ation of the mercury should be discontinued for a
Locally astringent mouthwashes are useful, whilst
ly tonics should be given. Where you wish to get
cury quickly out of the system, iodide of potassium
found the most useful drug, though it often pro-
ncreased salivation at first. We should not forget
en the patient is kept too long under its influence,
rious nervous and other affections may result, es-

pecially the so-called metallic *tremor* that affects all muscles of the body. In some persons the effect of drug is produced much more quickly than in others, it has an especially debilitating effect on persons alre exhausted by disease. Children under two years of are rarely if ever salivated, but we must remember a pe liar malformation of the permanent teeth which M. Hut inson has pointed out as being due to the incautious us grey and other teething powders. The defect of devel ment is said to be due to the stomatitis that is caused by mercury, leading thereby, secondarily, to inflammatio the developing enamel organs. If for no other reason t this we ought to be familiar with the ill effects of mercu lism. As a query by the way, Ringer remarks that th are those who cannot take even the smallest doses of m cury without it causing toothache. Is this independen caries? Perhaps some gentleman may be able to conf this statement, which I thought of sufficient interest to p mit of its being mentioned here.

We must now pass on to the consideration of *Chr Lead Poisoning* so far as it affects the gums. It is a con tion that one might meet with occasionally and perh quite accidentally in private practice and it is well that should be familiar with its appearance. In *plumbism* get the "blue line on the gums." This was first descri by Dr. Burton, and is due to the action of sulphuret hydrogen on the lead; the latter having been previou deposited in the substance of the gums, "black" sulph of lead is formed, hence the discoloration. We have development, then, of a narrow bluish or violet line al the free margins of the gums wherever the latter came i contact with the teeth. The sulphuretted hydrogen formed by the decomposing matter accumulating aro the necks of the teeth. Where there are no teeth there be no place for the tartar or food to collect, and hence th will be no sulphuretted hydrogen, and therefore, also, "blue line" formed. It appears first and is always m

around the incisor teeth, especially the interdental
s, and this is particularly the case when the teeth
kept clean. It may extend to the whole of the
nd even to the cheeks. The gums themselves are
tly retracted thereby, causing the teeth to appear
ed; the latter are sometimes discoloured, but
this is in any way due to the lead or not I am un-
When present, as it almost always is, it forms an
e diagnostic sign of the presence of lead in the sys-
is, however, occasionally absent, or at least very
narked, when the teeth are kept scrupulously clean.
cases it has been developed in the course of a few
y two or three medicinal doses of lead. It is, of
mostly found in painters, plumbers, &c., and those
being continually brought into contact with it; and
tients may yet be free from all other symptoms of
m. Where there are no teeth it may be quite ab-
Vhen we remember the many very serious digestive
vous paralytic troubles that arise from chronic lead
ng and the very many different ways in which lead
quite ignorantly and accidentally taken into the
it is, I think most advisable and indeed highly im-
so far as the patient is concerned, that we should
refully inquire into all cases in which, from the
n of the gums, there is the slightest suspicion that
ent is the subject of plumbism. If our inquiries as
eneral health, habits, &c., only tend to confirm our
n, we should then most certainly warn our patient
s possible condition and urge him to obtain medical
n the point. I only lately came across such a case
hospital. I regret to say I cannot show you the
to-night. The blue line along the gums was very
rked and the teeth were in a dirty condition gen-
On inquiry he told me he was a gasfitter, &c.

ere are two other metals which affect the gums in a
at similar manner, but their rarity makes them un-
nt, and I will not detain you long in describing

them. The first I allude to is silver, which metal may b introduced into the system of those working is silver mine or those who have been taking the nitrate of silver medici ally for some length of time. It leads gradually to a pe manent discolouration of the skin, which becomes of a dee uniform leaden hue, and we frequently find that this is pr ceded by a dark brown line on the gums. The latte therefore is of some value to the physician, as it indicat the necessity of stopping the administration of the dru before the *skin* becomes permanently stained. This coul hardly be confounded with lead, for some definite histor will be obtainable of the introduction of silver into the sy tem in some form or other. The other metal is *Coppe* In copper poisoning a greenish line appears along th gums.

In persons of a *Scrofulous* habit, we may often notic a red line running along the margins of the gums. Thi too, may be frequently seen in debilitated and other condi tions. Salter relates a most interesting case of a ver chronic and extensive ulceration of the gum and palat The surface was irregular and granulating, the ulceratio being quite superficial. The teeth were loose, and ther was no tendency for the affection to heal. The patient' appearance and history at once gave the clue to the caus of this particular diseased condition. His family ha shown marked indications of scrofula, and he himself wa the very embodiment of it. He was sixteen years of age and at time of applying for advice the patient was sufferin from a scrofulous ulcer on the arm, whilst the arms an legs were covered with scars the result of previous ulcers It was a most typical example of a constitutional affection manifesting itself locally in the form of an ulceration withi the mouth. A short time ago, one of our members sent case up to this hospital to obtain the surgeon's opinion an advice in the matter. I saw the case with Mr. W. Weiss The patient was about twenty years of age, and gave a ver strong family history of phthisis. She was evidently of

us habit herself, there being scars on the neck and
tion of the nasal ducts, &c., besides a general debil-
condition. About ten months previously, patient
e first noticed a few white and red spots on the gum,
l over the upper left lateral root. The condition of
s been very gradually spreading since then. The
vere very apt to bleed. On examining the gums,
as a small area over the upper incisor roots, which
ed a very spongy and swollen condition, was of
exture, and was covered with small papillæ. Ten-
and increased vascularity were well marked, the
t touch leading to rather free oozing of blood.
their margins was a narrow red line, whilst towards
cus they were of a pale colour. The teeth were
lly white and healthy, and quite clean. The pal-
o, was normal. There was a continuous slight dis-
and on pressure pus oozed up near the sulcus.
fine probe could be passed down on to a small spot
bone. We came to the conclusion that it was prob-
case of caries of the alveolus occuring in a strumous
, and that the condition of the gum was secondary
d caused by the irritation of the constant discharge,
om the diseased bone beneath it. I recommended
syringe it frequently with boracic acid lotion, and to
ston's syrup internally, and endeavour to improve
eral health as much as possible. She promised to
know how she progressed, but I have not yet heard
er.

nuch regret that time fails me to say anything about
ious forms of stomatitis that are of such frequent
nce and that arise from so many different causes.
philitic are specially worthy of our most careful con-
on and attention. Quite apart from their frequency
e of very considerable importance, and this is es-
the case when present in the mouths of children
the period of developing of the permanent teeth.
nly just mention a case of *Ulcerative Stomatitis* that

I had under treatment about ten days ago, and from which I afterwards took this rough model which I mow pass round. It shows very well the great destruction of gum that has occured all along the margins, so that the necks o the teeth are laid bare for a considerable distance. Patient was a boy of about five years of age. Some time ago he had an attack of measles, and during the last eight or ten days the mouth has been very sore and inflamed, the gums bleeding on the slightest touch, whilst the breath has been very fœtid. On examining the mouth there was a red line running all along the gum margins; the necks of the teeth were bare and bathed in pus. There was a great destruction of tissue, and the gums generally were much swollen and inflamed, bleeding freely on touching them I ordered the child to take six grains of chlorate potash internally three times a day, and to rinse the mouth out frequently with a gargle of the same salt, to which a little Condy was to be added. I saw him again four days later when all inflammation had entirely disappeared, the mouth was nice and clean and the breath sweet; in fact, the patient was well and the mouth normal, excepting the destruction of tissue that had taken place.

I must now very humbly apologise for having detained you so long, but the subject which we have been considering covers a very much wider area than I at first thought it did; as it is I have not said a word about some of the most important affections. My chief object has been to bring under your notice those affections especially which are of some diagnostic value and importance, and I should have done better had I confined myself more strictly to this object. But I have simply not had time to get a real grasp of the subject, much less to arrange and put it in a concise and interesting form. I have, however, done my best in this matter during the short interval since we last met, and to night I am sure you have done your best to give me an attentive and most patient hearing, for which I am extremely grateful to you all.—*London Dental Record.*

ARTICLE II.

ALUMINUM.

BY C. C. CARROLL, M. D.

luminum, one of the sixty odd elements, began to the attention of scientific men as early as 1807, when umphrey Davy first called attention to this peculiar and sought to isolate it from its oxidee, alumina, by posing it with the electric current, but without s.

1824, Oerstadt thought he had isolated aluminum decomposition of Al.2 Cl.6, a double chloride of the use of potassium, and produced a metal having stre and general appearance of tin. Wohler, follow- the footsteps of Oerstadt, in 1827, did isolate Al. by posing Al.2 Cl.6 by the use of potassium (K.), pro- a fine gray powder with a metalic lustre.

o farther mention is made of any advance step in ium isolation and production until 1845, when Woh- oduced some globules of Al. by reducing Al.2 Cl.6 apor and passing it over potassium confined in plat- vessels with which it became alloyed, causing it to be at a very high heat; nevertheless, he was enabled these globules to determine most of the properties ar to aluminum.

rom the literature of Al., it would seem that to H. aire Deville belongs the honor of having first isolated pure Al., by sodium, in 1854, and of determining e properties.

e was given governmental aid by Napoleon III., at emical works of Javel, where were produced many s of Al., which were exhibited at the Paris exposition, 5, where this metal first attracted attention as having bable future as an article of commercial use in the

The first notice of Al. appeared in American prints, in 1856, in a published article in the *Mining Magazine*, vol 7, page 317, in which mention is made of Deville having produced 50 or 60 pounds of metallic Al. which he sold for $100.00 per pound.

About this time Mr Monier, of Camden, N. J., it was claimed, had succeeded in producing metallic sodium, by a peculiar process, cheaply, thus insuring a cheap production of Al. that would cause its general introduction into the mechanic arts.

Over thirty years have passed since Monier's blighted promise, during which, at frequent intervals, has the announcement been made that the lucky man had been found who had made the valuable discovery whereby a cheap method of producing Al. was to be had.

As already indicated, this subject began with this century to attract the attention of eminent scientific men, and during the past eighty years have chemists and metallurgists sought to wrest from this coy mistress the secret of her loves and hates, with comparatively little success, until hope deferred leads us to fear the century will expire ere the entire solution of the Al. cheap production problem is realized.

The investigation of scientists would seem often to travel in a circle, from which, once described, it is difficult to depart, as at the present time we find the most hopeful promise for cheap Al. reduced by electricity, as first suggested by Sir Humphrey Davy. Another set of experimenters are to-day following in the wake of Wohler's sodium process, and are seeking for a method of cheapening the price of metallic sodium, which is now worth $5.00 per pound, a price too high for cheap production of Al. by this means.

Among the recent experimenters in this direction is H. Y. Castner, of N. Y., who claimed, some two years since, to have invented a furnace, by means of which, he was able to produce sodium for 25 cents per pound, which price would at once bring Al. to a correspondingly cheap rate.

luminum is the most universally distributed through-
earth's crust of all metals, constituting the very
f mountain, hill and valley of the rock-ribbed earth
which we tread. Notwithstanding its universality,
ver found metallic as gold, silver and tin; neither is
trace of it found in animal or vegetable composition.
ound in combination with oxygen, silicon, fluorine,
her bases, forming a numerous class of compounds,
silicates, such as albite, anorthite, orthoclase K. mica,
ca, Li mica, Mg mica, which, by the action of frost,
nd general atmospheric influences, are decomposed,
ali being carried away or replaced, leaving the res-
the form of clay. The clays are formed into soils,
the earth porous and susceptible of bringing forth
getable and fruit in its season for the sustenance of
mal, to be again given back as food throughout the
easeless round of feeding of animal and, vegetable,
pon the other, without waste or loss, with marvelous
ny, throughout the organic kingdom.

any of the aluminum compounds are dull in color,
t special interest to the common observer, such as
felspar, gneiss, porphy, eurite, trachyte, &c., while
possess a beautiful lustre and brilliancy and are
among the precious stones, such as the ruby, sap-
garnet, cyanite, topaz, turquoise, &c., including a
st of aluminum compounds, among which are bauxite
yolite, which are chiefly used in the production of
um at the present time.—*The Archives of Dentistry.*

ARTICLE III.

JOINT MEETING OF THE AMERICAN DENTAL ASSOCIATION AND THE SOUTHERN DENTAL ASSOCIATION.

REPORTED BY WILLIAM CONRAD, D. D. S., ST. LOUIS, MO.

The joint meeting of the American Dental Association and the Southern Dental Association was held at Louisville, Ky., August 28th and 31st., inclusive. Frank Abbott, M. D., New York City, President of the American Dental Association, and B. H. Catching, D. D. S., Atlanta, Ga., President of the Southern Dental Association, both being present and fulfilling the duties laid down by the programme with credit to themselves and profit to the meeting.

The rule governing the joint meeting was as follows: "As the joint session is only for scientific and social purposes, nothing but professional subjects will be discussed or acted upon."

The Female High School building was well adapted for the work of the Associations, and the local committee deserve special mention for the efficient manner in which they attended to the arduous duties imposed upon them.

The visiting dentists received every attention from the hotels, the people of Louisville, and the railroads leading into the city.

The attendance of the American Association membership was limited as compared with the Southern Association. The meeting was conspicous for the large numbers of Western and Southern dentists, and the lack of Eastern "Wheel Horses." It was easy to see from where the profession of the future is to draw its active workers.

The entire absence of Clinics of any kind was a constant source of regret. There had been ample provisions

for practical work, and its loss will be felt by many
are not so "scientifically high-toned" that they are
e making better dentists of themselves.

If it had not been for the enterprise of the dental dealers
ome few individual practitioners, the meeting would
been devoid of any actual benefit so far as practical
is concerned. The displays were excellent, and the
e to sell goods in order to pay "heavy expenses,"
ed the spirit of competition to be a source of gain for
very-day dentist. The S. S. White Dental Manufac-
g Co., with its efficient Tom Long and Dr. Selby of
e Dental Chewing Gum" fame, as representatives,
ed by the veteran editor, Dr. White, of the *Cosmos*,
ed too much for the lesser lights in the Dealers Asso-
n. The White Company secured accommodations at
ntrance and managed to capture many before they
l pass the fortifications. They deserved success, and
ed hard for it. The Sibley Dental Co., represented
oung Dr. Sibley; the American Dental Manufacturing
with its president, Hanway; the Welch Dental Manu-
ring Co.; the Florence Manufacturing Co.; C. Ash &
of London and New York, with a fine line of English
s; Wilmington Dental Co., represented by Brewster,
erly proprietor of the Kansas City Dental Depot, etc.

The room devoted to electrical appliances was one of
ain attractions, and proved the interest the profession
king in some form of motor. Dentists are getting tired
ing so much manual labor, and electricity is being put
rd as a candidate for dental favor. The electric battery
lmost been admitted a dead failure in the hands of
practicing dentists. They will not, or can not give it
ime to make it a satisfactory source of motive power.
direct wire, or the storage battery, seems to be the form
to be relied upon for constant work. Dr. Knapp of
Orleans, had his complete office outfit; it was pretty,
ooked dangerous. It would take an electrical engineer
ll the strings and work the wires, and in our Western

country it would scare away most ordinary patients; still if we could overcome this objection, it might cause some of them to extend our reputation by talking. Dr. Kells, of New Orleans, had on exhibition his office fixtures; they appeared to be very convenient and effective. The Detroit and Belding Motors were ably handled by their respective representatives. The Wooley Motor seemed to meet with general favor.

The papers were prepared for the " Transactions," and will be more interesting when considered deliberately. They were presented in groups, and the points of one paper would be lost while listening to another, consequently the discussion was most always off the subject

Members present who were accustomed to attend society meetings, said they had heard the same things repeated for the past ten years.

Dr. Frank Abbott's address as President of the American Association, on " Dental Education," was the first paper of the meeting.

Dr. B. H. Catching's President's address, " Is the Average Dentist of to-day a Specialist in Medicine ? " came next in order.

Dr. Abbott's paper, although of much interest and value, was not discussed, while that of Dr. Catching brought all the College Professors to their feet, it seemed as if to defend their pocket-books.

The Commercial Club, of Louisville, invited the members to an excnrsion, but the rain prevented its taking place. The club extended to the members the freedom of their club-rooms. The thanks of the Association was extended for these invitations.

Dr. W. S. How, of the S. S. White Dental Manufacturing Co., had a paper on " Dental Repair by the Employment of Inlays."

Dr. John J. R. Patrick, Belleville, Ill., presented an interesting paper on "Artificial Crowns."

Dr. Chas. E. Kells, Jr., of New Orleans, La., demonl the effect of heat and cold upon the various materials or capping pulps, making use of an electric apparatus is purpose. Gutta-percha proved to be the best non-ctor under his tests.

)r. T. L. Gilmer, Quincy, Ill., read a paper on "A ınd Cheap Way to Make Crowns."

)r. I. P. Wilson, Burlington, Iowa, paper, "The Apical ɔn of Cementum Physiologically and Pathologically dered." This was very highly complimented. He ɔned his hearers against the use of arsenic in dental ry, and especially against its use twice in the same tion.

)r. Frank Abbott, gave the Association the result of vestigations in a paper on "Odontoblasts in their ion to Developing Dentine." Drs. Abbott and Sud-entered into a personal discussion upon the relative s of American and European microscopical work, as ı in their microscopical slides.

Iany members visited Mammoth Cave, absenting elves from the meeting, and setting a bad example to s who might attend.

)r. A. W. Harlan read a paper by Dr. Smith, of Paris, ce, on the "Use of Cocaine, Administered Hypoder-ly."

)r. L. G. Noel, Nashville, Tenn., made a report on ıtal Materia Medica."

)r. Louis Ottofy, Chicago, Ill., presented a report on pient Decay," which showed great industry on the of the essayist.

)r. A. W. Harlan, Chicago, Ill., had a paper on "New edies."

)r. H. A. Smith, Cincinnati, Ohio, gave the Associa-one of the best papers of the meeting, on "Dental ntation," together with a tabulated statement, the of his investigation, which showed that about seven ent. of the cases reported were failures.

Dr. J. D. Patterson, Kansas City, Mo., paper, "Pyorrhœa Alveolaris." Dr. Patterson has made a special stud of this subject for a number of pears, and has presente several valuable papers, the present one being a continua tion of the subject. His theory is unique, but has as muc foundation in fact as any presented to the profession; i being the result of many years investigation.

Dr. W. W. Allport was allowed the privilege of th floor to make an explanation of a matter which concerne him personally.

Dr. T. W. Brophy, Chicago, Ill., made a report o "Anatomy, Pathology and Surgery."

Dr. John S. Marshall, Chicago, Ill., presented a "Re port on Some Cases in Hospital Practice."

Dr. J. Rolla Knapp, New Orleans, La., read a paper o "Cocaine." Its use was condemned by the Committe owing to its dangerousness, sustaining its position by quo tations from English dentists.

Dr. Genese, Baltimore, Md., a paper on "Rubber."

Dr. John S. Marshall, of Chicago, offered the followin interesting resolution:

> *Whereas*, It is the sense and belief of the America Dental and Southern Dental Associations in joint meetin assembled, that the tariff on imported dental and surgica goods works a hardship upon the profession and the public Therefore, be it
>
> *Resolved*, That we memorialize Congress to abolish al duties upon imported dental and surgical instruments, appa ratus and supplies.
>
> *Resolved*, That the secretaries of the Associations b instructed to forward these resolutions to the proper author ities in Congress, and that each member of the Associatio be requested to use his influence with the Congressma from his district to place the above-mentioned goods upo the free list.

The resolutions were greeted with applause, and Dr. J C. Story of Texas, moved that they be adopted as rea The motion was carried by an almost unanimous vote.

. J. Taft read a paper by Dr. J. Holly Smith, Balti-
Id., on "Dental Education."

. Louis Ottofy, Dr. Wm. H. Atkinson and Dr. L. C.
ll read papers on the same subject.

. Geo. J. Friedricks, New Orleans, La., read a paper
ental Hygiene." It was unfortunate that this paper
st on the list, as it was well worthy the consideration
l meeting. The writer proved himself one of the
ights of dentistry in the South.

CERS OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS FOR 1888.

e American Dental Association elected the following
for 1888-9:

esident, Dr. C. R. Butler, Cleveland, Ohio; First
resident, Dr. A. W. Harlan, Chicago, Ill.; Second
resident, Dr. S. A. White, Savannah, Ga.; Corres-
g Secretary, Dr. F. A. Levy, Orange, N. J.; Record-
retary, Dr. Geo. H. Cushing, Chicago, Ill.; Treas-
r. A. H. Fuller, St. Louis, Mo.; Executive Commit-
s. Darby, McElhany, Abbott and Crouse.

xt place of meeting, Saratoga, N. Y., August, 1889.

e Southern Dental Association elected the following
for the ensuing year:

esident Dr. J. Y. Crawford, Nashville, Tenn.; First
resident, Dr. John C. Story, Dallas, Texas; Second
resident, Dr. Wm. N. Morrison, St. Louis, Mo.;
Vice-President; Dr. John S. Thompson, Atlanta, Ga.;
ling Secretary, Dr. M. C. Marshall, Little Rock, Ark.;
onding Secretary, Dr. D. R. Stubblefield, Nashville,
Treasurer, Dr. H. A. Lowrance, Athens, Ga.

xt place of meeting, Galveston, Texas, third Tuesday
ust, 1889.—*The Archives of Dentistry.*

ARTICLE IV.

PERRY'S REMARKS IN CONJUNCTION WIT BONWILL ON AMALGAMS AND ANTICIPATION, ETC.

DR. W. G. A. BONWILL, PHILADELPHIA, PA.

Editor Items of Interest:

I must call your attention to May number of *Item*
Interest, where you have made extracts from the *Cosmo*
my article on "Amalgams," and attached the remarks
Dr. I. G. Perry, from a subsequent number of *Cosmos*, wh
I am made to say that I had abandoned *self-cleansing*
faces or separations to preserve teeth from further de
without filling, regretting that I had ever done it. Y
are so very careful and correct in your selections I can
blame you very much for this serious mistake.

Now I should not be Bonwill, unless I had the libe
of changing my views, my practice, or my instrume
whenever I please. Circumstances meet me every
where I am compelled to vary from the beaten course
fail. No one can in the practice of dentistry chain him
to an absolute system in each and every case. No be
field for ingenuity looms up before the wide-awake ope
tor. Any one who will follow my past history must ad
that I have been constantly on the change, cutting off h
and adding there, etc. I am able to do it and proud th
have the independence to do so!

Have I changed at all in my views of the practic
anticipating decay in human teeth? So far as the the
is concerned, I say no! Have I changed in its applicat
to the age of patient and the character of the teeth, and
caries met with? Yes! Thirty years ago, teeth were v
different in constitution than now. Then, a separat

decay had commenced could be checked. Fifteen ago, I could anticipate decay by the use of special ments in my dental engine, and in two-thirds of the oids and molars I could save from further caries. uperior or inferior incisors I could save seven-eighths st. To-day, or during the past five years, I am not ven to preserve a tooth from further ravage of caries thur's or any other plan where decay has once com- ed, without filling with some material.

n many cases, when I have attempted to *anticipate*, ing there was but a trifle of caries, I have been baf- for as soon as the separation has been made, I detect nge of color, but the surface has not yet given away ently to allow me to get into the substance changed, fine exploring needles as I use. A small bur in the e very soon tells the tale that a hole of slight diameter, eep in proportion, is actually there. The exploring e will not pass into the changed tissue. It can be ed only by the educated eye, and touch, and by the a dried surface, with a strong light.

o soon do teeth commence to decay after contact, with young patients, when they are not careful in sing, and the temporary teeth still in position with broad flat surfaces in contact with the coming per- nt tooth, that it is almost impossible to anticipate de- xcept in the temporary set, when you can commence rly as the third year, and in the cases of the present ation in the past eight years. Separation of any kind t insure success, for decay has gone beyond the lary and filling must be done. The poor constitution th generally found in large cities offer no hope for pation or separation when decay has shown itself.

o commence so early as the third year for the tem- y and the twelth year for the permanent set, except incisors, will not do unless you can have the perfect nt of patient and their complete obedience in submit- to the unpleasantness of the engine. The present average child is so nervous over the treatment of the te that they are very difficult to manage, and parents no lo ger have their progeny under control, nor have they t powers of endurance requisite for a healthy life.

What are we to expect in the future from any tre ment looking to the anticipation of decay, by cutting or filling when we find the temporary molar on its distal s face, where nothing but the gum is in contact, running decay, shortly after it is in position? Also the first p manent molar on its distal surface, when the second mo is nowhere near? The imperfect calcification of the to with the class of soft food now used and the imperf cleansing, and the immense amount of saccharin that da and hourly enter the mouth and clog on the surfaces of t teeth, make the problem harder to solve each coming ye This, to say nothing of the class of operations perform by most dentists; the want of method in laying out th work and systematically taking the teeth to be treated t most need it; the want of foresight in commencing wh they should have completed the operations; the gene lack of engineering skill in mapping out the whole thi in advance, etc., all warn us that we lack that peculiar tra ing given to the mechanical and civil engineer of prospe ing the work and taking in the whole thing before we co mence an individual act.

Then, sir, I still hold to the principle of cutting anticipation in both the temporary and permanent se Indiscriminately, however, it cannot be done. We mu have surroundings or we cannot carry out any princip The lack of constitution then, in the present tooth, forbi the general practice of anticipation or separation. Th done by me years ago when substance was better, I kn did its work, when I am confident decay would have occ red inevitably. This I have proven so often by anticipati on the most unfavorable side of the mouth and allowing t opposite side to remain in normal contact.

The judicious extraction of the first permanent mol ew cases saves the remaining teeth from caries. iere the bicuspids have separated from each other, found them decaying where no cause of contact ad predisposed. I have occasion to see every year, -first inferior bicuspid left—that thirty-four years moved the entire enamel and left it a perfect pyram- which could not allow a particle of food at any accumulate thereon. It remained perfect till two go, when I found on its polished surface, where posed to food and the brush, decay treacherously I filled it with amalgam, and in another year, at iear the apex of the cone, I found another carious Vhat but the constitution of the tooth undergoing in its very substance at the age of fifty-two could duced it? All the upper teeth were lost at twenty- ll the lower I have preserved for thirty-four years, the time I first commenced their treatment in 1854, an inferior incisor but had caries deep enough to a filling. But notwithstanding their poor struct- y two pulps have been treated and not a tooth lost ferior jaw, and yet this one inferior bicuspid that over thirty years at last decayed. There were sev- ers I cut at the same time that did not afterward

re is a case that had poor teeth at that early age, m cutting with a chisel and smoothing with a file ne—no engine—resisted decay and gave way only cut surface. He kept his teeth scrupulously clean e once a year for treatment. Where I did not cut, roximal surface but had to be filled.

vord as to self-cleansing surfaces after filling. For welve years, I have seldom made them of the bold- acter and wide at the cervix ; but contoured by cut- d, by the use of gutta-percha, widening or pressing h apart from mastication on it.

sum up.—Cutting the surface of any tooth is legiti- d correct practice. It can and should be done in many cases. It cannot be done as a broad gage rule where the average dentist has to do it.

That hundreds of teeth can be saven; and, if decay in the future takes place, there is not so much tooth substance gone. In the incisors, even if poor, I fail not to do it. I expect to do it whenever I believe it prudent. For the ultimate safety of the human teeth, nothing save a change to a more primitive diet, and the proper use of our teeth and observance of hygienic laws will ever give us immunity from caries.—*Items of Interest.*

ARTICLE V.

TEETH WITH DEAD PULPS, WITHOUT FISTULE, AND THE FILLING OF ROOTS.

DR. J. MORGAN HOWE, NEW YORK.

In the consideration of the subject I shall not weary you by attempting to be exhaustive, but will touch on some salient points concerning which there is perhaps the greatest disparity of opinion. Leaving our special consideration of the teeth whose pulps have been intentionally devitalized by the dentist, we have those whose pulps have been dead for an indefinite period, presenting various phases and phenomena which ought to be interesting, and are certainly troublesome and disconcerting to the practitioner. One prerequisite to the successful treatment of all teeth whose *pulps are dead*, and one which seems to be too little appreciated, is to obtain as direct access to the apical end of the pulp canal as is practicable by drilling or cutting away any portion of the tooth that obstructs, or makes such access more difficult. No part of the tooth need be recklessly

ed; but no hesitation should be felt in cutting away
nt to permit the most thorough removal possible of
rganized matter from the canals, and the most per-
ssible filling of the canals afterward. Of what benefit
e to spare a portion of enamel or dentine which in
gree prevents such necessary procedures, and there-
eases the probabilities of future irritation of periden-
es, and may cause the ultimate loss of the tooth?
crifice of a large part of the crown of any tooth, if
ry to attain the end, would be preferably to jeopar-
the health of the root. These remarks, however,
intended as an indorsement of the practice of using
burs in root canals any further than can be done
rtainty that they are following the canal; and this
restrict them to a limited use, in merely enlarging
ing more accessible the entrance into them. Edu-
ngers are often unreliable when the reaming tool is
y in their grasp, but if the engine hand piece is
l the rapidly revolving tool, they can tell almost ab-
y nothing as to where the point is going. The *great-*
e is desirable in all efforts to enlarge canals to avoid
g a drill through the root of a tooth at any other
han at its apex, and even this is undesirable unless
d for drainage.

ead pulps may be opened to external influences, or
in by fillings, or by unbroken walls of dentine. In
the teeth may be perfectly quiescent and comfortable,
y be the location of any grade of pericementitis.
anisation of the pulp tissue takes place after loss of
, but *putrefaction* cannot occur with access of micro-
sms which promote this process. This condition
fulfilled in an exposed dead pulp, it may always be
ed that it is putrescent. Free exit of this mephitic
into the mouth, with much more difficulty of its
through the apical foramen may, and often does re-
the tooth remaining free from perceptable perice-
irritation for an indefinite period, but when these

mechanical conditions are relatively changed, the tissues o the socket suffer from contact of putrefactive organisms o the poisonous results of their existence, and inflammatio comes as an acute of chronic process. Acute pericementitis under these conditions may generally be terminated i its earlier stages by removing all debris from the root canals, so as to reopen this obstructed vent. When it ha passed the stage in which this procedure gives relief, non irritant antiseptics, as iodoform in solution, or creosote, o an anodyne, as wine of opium, applied in the root cana may be effective, and counter-irritation applied to the gu is sometimes helpful, but these expediments are perhaps a likely to fail as to succeed ; active constitutional treatme if intelligently used will generally be much more effectiv The recognition that has been given to the efficacy of systematic treatment, in the new " American System of Dentistry," is, I think, a gratifying evidence of progres Chronic pericementitis frequently results in abscess by th time the case comes under treatment, and a blind alveola abscess is a condition that—I feel warrented by experienc in saying—should be treated with *distinguished* consideration. Haste in permanently closing the aperture throug which any abscess has had vent or drainage is always attended with risk of unfavorable consequences; and in th case of alveolar abscess, though immediate symptoms o irritation may not result, we are not on that account warranted in proceeding to fill the root till we are reasonabl certain the abscess is destroyed, and the process of repai has begun. The cleansing of pyogenic tissues and the application directly to them—if that were possible in thes cases—of antiseptic or other medicaments, would be n assurance that suppuration will not continue, and woul not therefore justify proceeding as if it had actually bee arrested, and the process of repair begun.

So much patience is often required in dealing with suc abscesses, and so great are the difficulties of evacuating th pus and applying successful treatment to the pus cavit

h the foramen of the root, that wearied with the
ony of unfavorable condition, we are prepared on
ccasions if ever, to resort to the use of some new
, which some one has somewhere recommended as
t of all. I have in this way discovered in what irri-
nood the tissues sometimes are, that constitute the
f a blind abscess. After using tereben several times
dorizing or disinfecting root canals—which it does
bstinate case of chronic, blind abscess, in connection
lower bicuspid, induced me to apply this drug in the
of the tooth. Within three hours pain was severe,
ute inflammation resulted, continuing thirty-six hours
I succeeded in arresting it. A similar result, much
vere in degree, has several times resulted from my
peroxide of hydrogen in efforts to cleanse blind ab-
nd eucalyptol recently roused the inflammatory fires,
bscess of this kind, with such manifestations that I
rsuaded to remove the tooth, whose chances of per-
t usefulness I had previously considered rather poor.
may be exceptional instances of the action of these
for they have been recommended for the condition;
rve to illustrate my statement, however, that a blind
s presents an irritable condition of the tissues, and
etter be treated with medicaments incapable of pro-
such results as I have described. I have known
ic acid to produce irritation in these, but not so se-
nd persistant as the remedies before mentioned.
reatment that has been most uniformly successful in
ands has been to remove all debris possible from
, and if no purulent discharge can be perceived, dress
in the canal with etherial solution of iodoform,
ng with cotton, in which very little sandarac or other
arnish is absorbed. If this produces no discomfort
ressure of purulent matter or mephitic gases in forty-
hours or more, the same dressing may generally be
in with gutta-percha, and the case conducted thence
e or more repetitions to a speedily successful termi-

nation, with root-filling; but, if on cleansing the canal a discharge can be observed coming through the apical foramen, I would apply no medicament, but stop the cavity loosely with cotton, to secure drainage of the abscess and exclude food from the cavity, and later follow with the treatment before described, but being more careful to allow some discharge by applying the dressing loosely.

Ordinary, blind abscesses will generally be cured by such treatment without unusual delay, but when suppuration has been long continued and the apex of the root is denuded of pericementum by the destructive process, the chances of cure are much less, because the end of the root acts like a foreign body in the tissues; in many cases it is eroded by the purulent accumulations, or has granular calculus deposited on it, and in most cases, whether these latter conditions are present or not, as an irritant which tends to promote continued suppuration, so that the most certain way of effecting a cure is to amputate the portion of the root thus affected. I have always heretofore accomplished this with a bur, with the tooth *in situ*.

When a dead pulp is sealed in from external influences, the tooth may remain for years without giving perceptible offence to the surrounding tissues, and unnoticed by its owner. During this time the pulp has been disorganized; but, as before remarked, putrefaction has not taken place unless the micro-organisms peculiar to this process have had access to the pulp canal. I infer that during the period in which the nutrition of the percimental tissues is not affected, *bacteria* are not present, but that irritation, inflammatory changes and suppuration are easily accounted for by the theory that organisms or spores have found entrance through the apical foramen to a condition so favorable to their proliferation, and that the immensely multiplied organisms themselves, or the poisonous products of their existence, become the means of injury to the peridental tissues.

When adead pulp, sealed and without external change dition, becomes a cause of irritation, whether imme- after devitalization, or indefinitely later—following d of quiescence—I infer that bacteria or spores have rought to the apical foramen, in the blood or other- nd that to their agency is due the changes which aused inflammation or suppuration. It is noticeable ly that enervated conditions, or systematic debility he access of such inflammations, which frequently after long periods of immunity, notwithstanding the ce meanwhile of the dead pulp. But perceptible on is not always in these cases the beginning of in- we notice this peculiarity, that pus is often already when the patient applies for relief, and that the n and best procedure,—drilling a vent,—yields a it discharge, though the inflammatory manifestations ve been present only a few hours. With these, and n which the dead pulp is exposed, chronic abscesses onsiderable destruction of tissue, may be formed at ex of the root, without a perceptible inflammatory s, and the real condition perhaps be discovered only acute symptoms lead to diagnosis and treatment; as erial proliferation in such favorable condition were of producing suppuration without the phenomena mmation preceding, but coming after as a result of ension or acceleration of the former process.

nce 1882 I have practiced the method suggested to Dr. Bodecker—since published by him—of making ning, just giving access to the pulp cavity, and with- e least effort to remove disorganized matter, intro- quickly some solution of iodoform in ether, or n alcohol, on a loose tent of cotton, and sealing im- ely with gutta-percha. After three or more days ot canals are cleansed and dressed with the same n, and again sealed, and a few days after this second tion the filling of the roots may be accomplished. lowing this method I have found such exemption rritation of peridental tissues that I may say there has not been a single failure; the few instances in which some pain followed opening the teeth resulted, in my opinion, from my undue confidence leading me to remove some of the pulp debris before making the antiseptic application. In these pain subsided in an hour or two after it began, and without treatment, or any subsequent unfavorable results. These latter incidents seem to me to be strong additional evidence of the power of iodoform to prevent the progress of putrefaction and the pericemental irritation resulting, which is notably so difficult to arrest; for before the use of iodoform in these cases I had almost never known this inflammation to yield to treatment satisfactorily; but with such results invaribly following this preventive method, I have for a long time regarded the opening of such teeth as an operation attended with no risk. I do not hesitate to open any such tooth that needs treatment. I have already suggested an explanation, that in a dead pulp causing no irritation putrefaction has not occured; but admission of air and these life germs cause it to begin immediately, and the bacteria or poisonous products of their life produce the irritation; and as they are also the organisms of suppuration, the latter is difficult to prevent when inflammation is commenced under such circumstances.

Iodoform fulfils the requirements, and does not produce any irritation in concentrated solution, which cannot be said of other substances that approach it in antiseptic power. If disinfection or changing of a substance that is poisonous to an innocuous condition, were what we require, how shall we account for the fact that poison has been in the root for years and has not irritated the peridental tissues, but will do so within a few hours after admission of the atmosphere unless measures are employed to prevent it? Or if sulphuretted hydrogen is the cause of the disturbed nutrition we have to fear, how can we account for the fact that the vent which would be so necessary for its escape is shown to be unnecessary?—*N. Y. Trans.*

ARTICLE VI.

AD AND DISEASED TEETH AND THEIR TREATMENT.

DR. E. S. NILES.

'or convenience, I shall divide my subject into four
s :—

. Teeth with central nerves and vessels extirpated,
'ee from internal and external septic infiltration with
ridental membrane performing its normal function.

. Teeth with their central nerves and vessels des-
l, and their decomposed remains unremoved, and
infiltrations extending to the peridental membrane,
becomes inflamed at the slighest depressing influ-
n the general system.

. The death of the central pulp, followed by putre-
n and infiltration of all the dentinal tissue, the cemen-
ssues infected, inflamed, thickened, and a connective
wall formed protecting deeper parts of the alveolus.
wall is usually located at the foramina at the apex of
oot, and is generally known as the "secreting sac,"
g from which is the fistulous passage opening to the
e offering the least resistance of tissue. When this
tion is allowed to continue for years, the root mem-
is destroyed, and even the root itself is absorbed
y or in part.

A tooth becomes dead when it loses its membrane as
s its central pulp. These teeth I have designated as
th class. Their destruction is rarely due to the death
e pulp by internal causes, but more especially from
ard wasting of tissues, from calculus or diseased alveo-
ssues, when without support such teeth may be called
irritating, foreign bodies.

In the four classes of diseased teeth mentioned we ob-

serve variable conditions, any one of which of the mild
forms may be but the progressive stages of the same troub
which if not arrested will lead to the loss of that toot
if not to more grave results. A tooth if deprived of i
central nerve and blood supply resists destructive agenci
of decay by its chemical integrity, in so far as this integri
is not overcome by what may be called "greater chemic
affinities." As it becomes septic, within the pulp-chamb
its destructive tendencies are two-fold; it is "a house divi
ed against itself," and the only agents necessary to supp
and carry on the destruction of the tissues are water a
air. The products of this change, as we find them, are d
prived primarily from the pulp matter, but later from t
breaking down of the organic substance of the tubuli. T
main portion of the pus, however, in the progressive stag
is derived from the diseased or infected tissues immediate
at the apex of the root, the fistulous opening usually a
pearing on the surface of the gum, carrying or furnishi
vent to the matter and gas to which it auguments. T
generation of gases accompanying the breaking down
the dental tissues is, for the most part, the same as tho
generated from decomposing organic bodies whose cons
tuents are largely of phosphorus matter, as the brain, bo
or fish. This gas I apprehend to be phosphoretted hydr
gen. It is found also in closed cavities of decaying tee
and is significant of decomposing organic and inorga
tooth structure into ultimate proximate principles, as lin
magnesium, phosphoric acid, or phosphorus, and probab
the re- formation of other substances, as in the case
phosphoretted hydrogen.

If we are to weigh the questions of life or the death
an organ, our attention is first called to known arrang
ments of tissues, that involved in death and that living, a
we draw our conclusions as to the vitality on which re
our chief reliance for support; we look at the condition
a tooth without central blood-vessel or nerve supply, a
we see at once the only reliance for vital support is fro

emental tissues, and all treatment must be directed to rve these tissues from the destructive processes proing in the dentine. When once this infectious matter nvaded the pulp chamber and tubuli, the tooth bes ever after an easy prey to these changes, and in no can it be kept so free from septic influences as to pret from becoming septic.

For various reasons teeth do die, and we find dead resulting from numerous causes; and though not s septic, they are liable to become so if at all exposed: well known that a devitalized pulp may not cause any ion, either during death or for years after; but this ot be regarded as evidence that such teeth should not sinfected, cleaned and sealed up, but should be regardther as an indication of the power of the geneaal n to take up or absorb dead matter. Such power, ver, may or may not be present at different periods of For instance, a tooth may remain quiet for years, and suddenly enter upon acute inflammation and terminate hronic cold abscess. The poisonous matter generated the dentine having infected or poisoned the soft tisthe system no longer able to carry on the absorbing ss, it expels the matter and provides for future accuion by a fistulous opening and a connective tissue round the infected parts.

We have thus described the second class of teeth d, and indicated the progressive stages of septic ines which render the tooth more and more irritating surrounding parts. We often find that the fistula, bed, leads to a large cavity immediately at the end of oot, and the root, denuded of its membrane, furnishes tion of the wall to the cavity named.

TREATMENT.—When the cause of the trouble and the tions of tissue are well understood, the question of nent is often simple. With the present difficulty and eans at hand, barring mal-formation of the roots, the es of success are more than equal to any operation we are called upon to perform. As in all diseases of th system, if our patient is strong and vigorous, however lon the abscess has existed, fifty per cent of success is assure On the other hand, desired results are not so speedily o tained in more delicate or enfeebled health. In all case relief from pain is the first step in treatment; often an ac ing, exposed pulp may, by the use of narcotics, be treate into rest and the pulp destroyed.

For the destruction of pulps, I have found for t present, nothing that meets the wants of the case so we as arsenious acid, though I am of the opinion that a bett preparation can be prepared. That used by me is compose of equal parts of arsenious acid and the acetate or sulpha of morphia, made into a paste with carbolic acid or creoso Right here is danger. Many inflamed peridental me branes are caused primarily by arienic preparations getti through the apex o, the root and creating dead tissue a aseptic influences. It is better to cause the patient a lit pain than to run the risk of a diseased membrane. have used nitrate of silver with very favorable results. does not cause pain, and its destruction of tissue immediate.

With the usual means, the roots are cleared of all t pulp possible, dried with hot air till there is no moistu not only the pulp canals, but the dentinal tubes should dried as far in as possible, after which the alcohol m enter even to the inter-globular spaces. In filling, I ma use of the well-known preparation of gutta-percha a chloroform. In the treatment of abscessed and septic tee of course a long cleansing process is necessary. I strong oppose the method of opening through the apex of t root, as by so doing there is great liability of further infe ing the tissues by means of the infected drill, though I u the drill to get a free opening as near the apex as possib This done, the canals are washed thoroughly with wa water and dried with hot air, after which is saturated wi a solution of strong bichloride of mercury (five per cen ening in the crown being stopt with gutta-percha. s repeated once in three or four days till there is no of phosphoretted hydrogen, and I am satisfied that th is thoroughly aseptic, when it is sealed and filled ie previous case.

ter a portion of the peridental membrane has been ed, is it possible to render the cemental structure otic that the alveolar tissues will harden about the d surface without irritation? Of course there is not ice of success as in the previous cases, but in the of the average person of health, the bichloride treat-hould be tried outside and in. I have been surprised results of the cases treated; out of three, two have iccessful; the other was a case where I could hardly success; so extensive was the trouble that three of perior centrals had their roots partially absorbed, only course seemed to be extraction, which, after eration, I did not regret at all. Though badly dis-ind absorbed, the alveolus healed very quickly with-atment.

is hardly necessary for me to say that my treatment fourth class of teeth named is extraction, as they are "dead teeth" and "foreign irritating bodies."—*In-ent Practitioner.*

ARTICLE VII.

NÆSTHETICS IN DENTAL PRACTICE."

BY J. C. REEVE, M. D., DAYTON, OHIO.

y attention having been directed to an article under ove heading published in the *Register* for September, the liberty of making some comments upon the doc-

trines of that paper and of presenting some thoughts up
the subject at large.

The administration of anæsthetics is a matter of dee
est interest to both the surgeon and the dentist, a
nowhere do the two respective professions come in clos
contact, or so intermingle as here. As I find myself unab
to assent to much that is in that paper, and as I am d
cidedly opposed to the administration of such anæstheti
as chloroform and ether by dentists, I will commence
disclaiming any disposition to consider the paper or t
subject in any other spirit than that of science. Farther,
clear away all suspicion of personal bias, I will say th
there is no professional duty I perform so unwilingly
that of administering an anæsthetic for dental purposes,
fee that I consider so hardly earned as that which I recei
for this service. At the same time I am frequently givi
anæsthetics for general surgical purposes without hesit
tion and without undue anxiety. I am in the habit of a
vising those who come to me for this purpose to ta
nitrous oxide gas. But unfortunately there is, in the ci
in which I live, so far as I know, but a single dentist w
administers this agent.

I waive all consideration of the point, as to it being
worse for the dentist than the surgeon to lose a patie
under any anæsthetic. It is not a pleasant thing for eith
to go to bed on; but, happily I cannot speak from exp
ience. I consider first the question: Are anæstheti
more dangerous in dental practice than in general surger
The answer must be unqualifiedly in the affirmative. Wit
out attempting to collect statistics take only those of t
Royal Medico-Chirurgical Society and those of Sansom
The one gives 8 cases of death under tooth-drawing out
100 of all operations, and the other 12 out of 107. He
then is nearly 10 per cent. of all the deaths occurring
dental operations. But this statement alone gives no ju

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[*] On Chloroform, London, 1865, p. 69.

the relative mortality. This could only be accu-
scertained if the total number of administrations in
ical operations was known. Certainly anæsthetics
inistered for general surgical purposes hundreds of
r once in dental practice, and if so, then the relative
of deaths under tooth-drawing is enormously large.
e causes of the high rate of mortality during this
ar operation are not far to seek. I do not believe
entrance of blood into the air passage is very im-
. Several deaths, however, have been caused by an
ed tooth falling into the larynx, without doubt due
osition of the patient. Anæsthetics should never
inistered unless the patient be recumbent. This is
wever, in my opinion, a very potent factor and was
nsidered in the paper. Another is the particular
nvolved in the dental operation, the acute pain
by injuries to it and the powerful effect of sudden
ions upon its branches upon the great and vital
es of respiration and circulation. By sudden im-
ns upon this nerve more than any other, is that inhi-
f the heart's action brought about which is sudden
Far more important than all, however, is the fact
induction of anæsthesia for tooth-drawing is likely
ncomplete, and will pretty certainly be so if the
r is also the administrator. Now it is a positive
e of the highest and latest authorities that such re-
ions as above given are increased under chloroform,
tate of partial anæ[illegible]hesia is therefore one of especial
and especially so if the pain produced is at once
and sharp.* It is gratifying, therefore, to see that
rce of danger is fully recognized by the author of
er although it is not emphasized as it deserves to be.
s no more seductive procedure than to give a few
f chloroform for the extraction of a tooth; there is
re dangerous practice. If an anæsthetic is given at

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der Brunton's Therapeutics, and Buxton on Anæsthetics, 1888.

all, it should be given until the patient is "off." There no plainer doctrine than this connected with the subject.

I must dissent *in toto* from the doctrine that a full do of whisky before the administration of an anæsthetie secu safety. No one can have a higher respect than I have f the gentleman from whom the author of the paper quot this practice, a practice which is by no means, howev confined to one person. But this doctrine of a stimula insuring safety is a fallacy based upon the reasoning th "I have pursued this course so many hundreds of times never had an accident, therefore it is the thing to do." N setting aside the miserable after effects of "a full dose whisky," especially on delicate females, who are largely the majority among dental patients, I can adduce from t record of deaths under chloroform many instances in whi an alcoholic stimulant was given just before the fa inhalation.

I regret to see the administration of bromide of eth recommended in the paper as I regret to see its use ag advocated by men whose standing in surgery is high. regret it, because I believe it to be a dangerous agent, a this belief is based upon: 1st, its bad record; its rate mortality is high when the number of times it has be administered is considered. 2nd, Its marked perturbati influence upon the heart's action. This effect was sho by three personal inhalations I made when this agent w first introduced.†

I looked with interest in the paper for such objectio to the use of nitrous oxide as would justify dentists in r sorting to the stronger anæsthetics. I could not find the Those adduced seem but trivial when the tremendous re ponsibility is considered which the dentist takes upon hi self when he proceeds to administer chloroform or eth when the awful calamity of a sudden death from the s comes to mind. "All anæsthetics are dangerous"[*] he teaching of experience; it is a doctrine that no ologist will doubt for a moment. But nitrous oxide record which is so enormously large, which presents instances of accident, that it seems to one who has to this subject no small amount of study, most pass-range that a set of men who can use this agent in their ce, even with some discomfort and drawbacks, and ps considerable trouble, do not do so more generally. cannot close this article without a warning against ew-fangled anæsthetics which are being introduced ntal practice. I have investigated one and believe all what that one was—diluted chloroform. Now the nd equable dilution of chloroform with air is one of st measures of safety, but it does not insure it. Death chloroform has occurred, when the vapor was cer-, mechanically by an inhaler, kept down to what is ally the safe point. Death has occurred early in the ss when but little had been poured from the bottle. occurred to those who had taken it safely before, several times. The fact is chloroform is an uncertain ly,[†] and as for ether the case referred to in the paper ugh for the experience of a life time.

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†See "Two New Anæsthetics," Cin. Lancet and Clinic, April 10, 18

inally, the writer of the paper alludes to the appear-of a dentist before a jury investigating a case of death an anæsthetic administered by him. How would he r had he taken it upon himself to administer the agent perate too, a thing which no surgeon ever does; or, was obliged to confess that what he administered was et preparation and its composition unknown to him! *ntal Register.*

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eport of the Anæsthetic Committee of the British Medical Asso-, in " British Medical Journal, 1879.

Editorial, Etc.

Correspondence between F. J. S. Gorgas, Dean o University of Maryland Dental Department, and D T. S. Waters, President of National Association o Dental Examiners.—

Baltimore, October 9th, 1888.

Dr. T. S. Waters, President National Association of Dent Examiners:

Dear Sir.—On reading the proceedings of the Seven Meeting of the "National Association of Dental Examiners as published in the October number, 1888, of the *Dent Cosmos*, I was surprised to find that the "University of Mar land Dental Department" was not among the number Dental Schools whose diplomas might be recommended your Association to the various State Associations to be r ceived in lieu of an examination. As the University of Mar land Dental Department has strictly complied with all t requirements of your Association in regard to the matriculati and graduation of Dental Students, length of sessions, &c., desire to learn from you the cause of the omission.

Respectfully, &c.,

Ferdinand J. S. Gorgas,

Dean of University of Maryland Dental Departme

Baltimore, October 11th, 1888.

Dr. F. J. S. Gorgas, Dean of University of Maryland Dent Department:

Dear Sir.—In answer to your query of October 9th, as the cause of the omission of the University of Maryland Dent Department from the list of Colleges and Departments to recommended to the State Boards of Dental Examiners in lie examination, have to say that it was by the unanimous of the National Board of Dental Examiners. I do not memory the wording of the resolution, but if you will ss Dr. Fred. A. Levy, of Orange, N. J., you can get the d information. Dr. L. is the Sec. and has the records. School is not the only one left out in the cold. I think lleges that are not members of the Association of Dental ies were left out of the list. We also struck from the e of the Washington Colleges that joined the Association ulties this year.

he National Board are honest in their work, and mean to in a high standard of Dental Education.

Very respectfully,
T. S. WATERS,
Pres. of N. B. of D. Examiners.

BALTIMORE, October 13th, 1888.

T. S. Waters, Pres. Nat. Association of Dental Examiners :

Dear Sir.—I desire to acknowledge the receipt of your o my communication of 9th inst. requesting of you the of the omission by your Association, of the name of the sity of Maryland Dental Department from the list of Schools whose diplomas have been recommended to rious State Associations to be received in lieu of an nation. In your reply you give as a reason for such on, *that our Dental Department is not a member of the iation of Dental Faculties,*" and also state that this on the part of your Association was unanimous. Of you mean that it was the unanimous action of the *en members* who were alone present at the Louisville g of your Association on the 29th of August last. representing but *eleven* States—eight Northern and three Southern, ng among the latter Maryland, from which you were the ember of the State Board of Dental Examiners present. desire to reply to your letter in the kindest manner posnd without the slightest ill-feeling towards any one of the *seventeen* members, and I trust that you will so receive i although I cannot help regarding such action as an indignit very unjustly and without cause placed upon one of the mo reputable of the Dental Schools of this country, which ha from the date of its organization, maintained as high a standa of dental education as any other, and indeed a very muc higher one than has many of the Schools whose diplomas t seventeen members of your Association recommend in lieu an examination.

I think I am correct in stating, that (with one exceptio I have been longer engaged in teaching dentistry than a other gentlemen now connected with the various dental schoo of our country, and my aim has always been to maintain a hig standard of Dental Education; hence, I can truthfully asse that I, as well as the gentlemen associated with me in t faculty of the University of Maryland Dental Departme have at all times been ready and willing to do all in our pow to advance the interests of our profession, and aid tho engaged in a like work.

Would the mere fact of membership in the Association Dental Faculties give to our Dental Department any high reputation than it at the present time possesses?

Has not our Dental Department from its organizatio maintained as high a standard of dental instruction as a Dental School or Department in the world? and is not t fact acknowledged by every State Dental Association in t country who has recommended students to our School? And it not further verified by the large number of dental students w attend its annual sessions, not one of whom has gone elsewhe to graduate, except those, who have either been rejected at t final examinations, or have been guaranteed diplomas, or low fees, by other schools? Also by the large number of promine and reputable dental practitioners of this and foreign countri who send their students to our Dental Department? Take t present unusually large class as an example, which contai members from England, Germany, Switzerland, Holland, Po tugal, Turkey, South America, West Indies, Canada, Ne Brunswick, and from nearly every State of the United State Again, have there ever been any charges brought against o l Department for failure to comply with any of the ements of the State Boards of Dental Examiners, or of merican and Southern Dental Associations? I have heard of any, and defy anyone to prove that we have ictly complied with all such requirements, and refer to nual Catalogues as to what our requiraments are. Have any member of the Maryland Board of Dental Examiwith one exception, (Dr. Richard Grady), ever visited ntal Department of the University of Maryland during sions, to make yourself acquainted with the manner of ching, although its doors have been, and ever will be o you and your colleagues? Does not the fact that no an *three* of the five members composing the Maryland of Dental Examiners, have recommended students to ental Department for the present session, and that Dr. rd Grady, one of these members, has been sending ts to us for several years, prove that the majority of the ers of the Maryland Board of Dental Examiners are satwith our course of instruction and recommend it? Is . Richard Grady one of the most intelligent members of aryland Board of Dental Examiners, and fully competent ge, having for many years filled the positions of Teacher rincipal in some of the highest Public Schools of Balti-City? Have not the prominent dental practitioners from s parts of our country, who annually act as Judges in ing prizes at the contests of our Graduating Classes, pro-ed the operations performed in their presence by our nts in the Dental Infirmary, to be of the highest and atisfactory character? Further: Is there any clause in aryland Dental Law that empowers you to act, in regard l law, independent of your colleagues? For I have been ed that no meeting of your Board was held, at which ere appointed its representative to the Louisville meeting, at no instructions were given you to omit the name of University of Maryland Dental Department" from the Schools whose diplomas were to be recommended. On ntrary, one of the members of your Board of Dental iners has repudiated such action, and declared it to be *utrage*," and "*a stab in the dark.*" Was any intimation of such action on the part of the *seventeen* who met in Loui ville, ever given to the Faculty of the Dental Department the University of Maryland? I, its Dean, never heard of until it appeared in the October number, 1888, of the *Dent Cosmos.* Does the Maryland Dental Law, or that of an State, empower its Board of Dental Examiners to discrimina against one of the Dental Schools in said State without an just cause? No court in our country will sustain such actio and you must know that the Maryland Board of Denlal Exam iners cannot reject the diploma of the "University of Marylan Dental Department," merely because its Faculty have not b come members of the Association of Dental Faculties; and th same may be said of every other State Board of Dental Exam iners in this country.

ARTICLE VII of the Constitution of the "Association Dental Faculties," reads as follows:

"Any reputable dental college may be represented in th body upon submitting to the Executive Committee satisfactor credentials, signing the Constitution, conforming to the rul and regulations of this body, and paying such assessments may be made."

I am certain that you, regard our Dental Department *a reputable* one, and the same may be said of every one of th members who composed the Louisville meeting, and who we a very small minority of the members composing the vario State Dental Examining Boards.

In your opinion, is the restriction of dental students, whi attending the dental schools of our country, to Mechanic Dentistry for the first year of the two-year's course to th exclusion of Operative Dentistry for that year, a proper metho of teaching dentistry? I am aware that this regulation ha recently been made non-mandatory, but nevertheless th Association of Faculties yet recommend it. My long expe ience in teaching, leads me to consider a course of *two* year instruction in operative dentistry as short enough.

Finally, I ask, if it was intended by the *seventeen* membe composing the Louisville meeting, that printed circulars co taining the names of the Schools whose diplomas are recom mended to the various State Associations, and to which

ned the name of "Fred. A. Levy," Secretary, Orange,
Jersey, should be circulated among the students at pres-
ttending the "University of Maryland Dental Depart-
" *as has been done*, for the purpose of injuring our Depart-
? Several of these circulars addressed to our students,
w in my possession, but like all such mean acts, this one
iled in its purpose. I will do you justice by saying that
not believe you have been a party to such an act, nor
ware of it; but that others have been thus guilty can be
proven. We ask for our Dental Department no more
what is just, and are willing that it should be judged
ding to its merits; but we also demand that the members
"Board of Dental Examiners," appointed by the Gov-
of the State of Maryland, shall act impartially, and foster,
d of injure, the reputable Dental Schools of Maryland.

Respectfully, &c.,

FERDINAND J. S. GORGAS,

Dean of University of Maryland Dental Department.

BALTIMORE, October 17th, 1888.

T. S. Waters, Pres. Nat. Board of Dental Examiners:

ear Sir —I desire to acknowledge the receipt of your
card of 16th inst., in which you state that "the National
l of Dental Examiners" took no action against the Den-
epartment of the University of Maryland, all they did
to recommend certain Schools as were or are members
Association of Dental Faculties, and that "if your
l had been a member it would be in the list recom-
ed." I am very much gratified to learn this, especially
reason that certain parties have taken advantage of this
ion to circulate a report that our Dental Department is
cognized by the various State Boards of Dental Exami-
which, as you are aware, is false.

letter, however, received this day from Dr. G. F. S.
nt, the President of the State Dental Examining Board
th Carolina, who was present at the Louisville Meeting
gust 27th, 1888, where he represented his State Board,

furnishes information concerning the proceedings of t National Association of Dental Examiners at the Louisvil meeting, which is altogether different from the report publishe in the October number, 1888, of the *Dental Cosmos*, and als from the circular bearing the name of Fred. A. Levy, Sec'y Orange, N. J., and which was mailed to Students of the Dent Department of the University of Maryland.

Dr. Wright's letter is as follows:

GEORGETOWN, S. C., October 15th, 1888.

Professor F. J. S. Gorgas, Dean Dental Department Unive sity of Maryland:

Dear Sir.—Your favor of the 9th has just reached me, must have been delayed in Columbia. I do not know why t *Cosmos* is *short on facts* in the October issue, unless the reporter got his notes mixed. The said reporter was ve busy with the regular joint meeting, as well as the separa meetings of the two Associations, and the Association of Fa ulties, also last but not least, The National Association Examining Boards, *before which the Dental Department the University of Maryland passed when the roll of Dent Schools was called. Passed without objection or comment any kind.* If this had not been the case, and for cause it ha been omitted, then I should have informed you, and if t cause could not be removed, then I should have requested change in the Corps of Clinical Instructors. Dr. Waters, your city was presiding when the above roll was called by t Secretary, and as each Institution was named the Preside would ask in these words: "*Any objection?*" and if none w offered, he announced: "*Passed.*', But if objection or inqui arose, the merits of such case was then discussed and dispose of. If you ask Dr. Waters, of your city, who at that time w elected President of the National Association of Dental Exan ining Boards, or write to Dr. Fred Levy, of N. J., my stateme will be sustained. If my memory is not at fault, there were b three Institutions objected to, one in Canada, and two in t United States, but not in Baltimore.

Very respectfully,
G. F. S. WRIGHT, D. D. S.
President of South Carolina State Board of Dental Examine
and Delegate to the National Association of State Dent
Examining Boards, Meeting, Louisville, Ky., 1888.

Respectfully, &c.,
FERDINAND J. S. GORGAS,
Dean of University of Maryland Dental Departme

BALTIMORE, October 19th, 1888.

T. S. Waters, Pres. Nat. Association of Dental Examiners:

Dear Sir.—I desire to call your attention to the following received to-day from Dr. G. F. S. Wright, President of outh Carolina State Dental Examining Board:

GEORGETOWN, S. C., October 17th, 1888.

ssor Gorgas:

Your telegram just received. If, after you have written e Secretary of the National Association of State Dental nining Boards, and received his answer, you find it neces- you may publish the *fact*, that I say the Dental Depart- of the University of Maryland *was passed by the National ciation with the same standing as the other Schools whose mas may be accepted as equivalent to an examination.*

Very truly yours,
G. F. S. WRIGHT, D. D. S.,
dent of South Carolina State Board of Dental Examiners,
nd Delegate to Louisville, Ky., 1888.

Respectfully, &c..
FERDINAND J. S. GORGAS,
Dean of University of Maryland Dental Department.

BALTIMORE, October 29th, 1888.

T. S. Waters, Pres. National Association of Dental Examiners:

Dear Sir:—At your suggestion, and also that of Dr. G. Wright, President of the South Carolina State Board of al Examiners, I wrote to Dr. Fred. A. Levy, of Orange, , asking him if our Dental Department had been omitted the list of Dental Schools by your Association, and if so, hat cause? The only reply I received from Dr. Levy hat he understood I had printed a circular in which his appeared, and requested a copy. He returned no ers whatever to my questions.

This day I received the following letter from Dr. W. C. dlaw, of Augusta, Georgia, a member of the Georgia State d of Dental Examiners, who was also present at the

Louisville meeting of August, 1888, as a representative of his State Board:

AUGUSTA, GA., October 25th, 1888.

Dr. F. J. S. Gorgas, Dean University of Maryland Dental Department:

Dear Doctor.—I am just in receipt of a copy of the correspondence between yourself, Dr. Waters, and Dr. Wright, relative to the omission of the name of your College from the list of Colleges whose diplomas should be recommended to the Examining Boards in lieu of an examination.

I am glad that before its reception I had an opportunity of pronouncing, at a meeting of Dentists, the said omission a clerical error. I, with Dr. S. B. Barfield, of Macon, Ga., represented the Georgia Examining Board in the Louisville meeting, and my recollection is clear upon this matter. For having heard whisperings that objections might be made against your College, I, at considerable inconvenience, attended the Session of the National Board of Dental Examiners, at which the roll of Colleges was reviewed, prepared to fight the question, and was consequently upon the *qui vive.* The roll had been gone over at a previous meeting, and in being revised for adoption at this session, was gone through with two or three times, and each time there were errors to be corrected. so that I am not surprised if the mistake (unintentional) does actually exist in the Secretary's record. But a mistake it certainly is. I feel sure that Dr. Barfield and others will substantiate me in this.

There was one subsequent session of the Board of Dental Examiners at which I was not present, but at which, I was told, nothing had been done but the election of officers, and routine business.

I voluntarily write this, so that if the records of Secretary Levy are wrong, your College may still be set right.

Very truly yours,
W. C. WARDLAW.

Respectfully, &c.
FERDINAND J. S. GORGAS,
Dean of University of Maryland Dental Department.

BALTIMORE, November 1st, 1888.

red. A. Levy, Sec'y. Nat. Asso. of Dental Examiners:

)ear Sir.—I desire to acknowledge the receipt this day rinted copy of the proceedings of the Seventh Annual ng of "The National Association of Dental Examiners," return, send to you enclosed the printed circular, con- the correspondence between Dr. Waters, Dr Wright yself, and also a letter from Dr. W. C. Wardlaw, of the ia State Board of Dental Examiners, who, with Dr. S. B. ld, represented said Board at the Louisville meeting of Association. According to Dr. Wardlaw's letter, the list ntal Schools was reviewed and re-reviewed two or three and finally disposed of, with no objections to the Univer- f Maryland Dental Department, which, as Dr. Wright ates, was "*passed without objection or comment of any*

In your report of the proceedings, according to the d pamphlet received from you to-day, it appears that in t session of your Association, at which there was a very reduced attendance from the *seventeen* original represen- , but at which session the State Board of Georgia *was* ented, if that of South Carolina was not. The list of l Schools was again revised, and according to the number hed in your printed proceedings the University of Mary-)ental Department was omitted. Is not such a record of roceedings strangely incorrect, as Dr. G. F. S. Wright, y of whose letter I send you, was, according to your , one of the Committee appointed to prepare a list of the l Colleges which your Association would recommend to rious State Boards? Does not Dr. W. C. Wardlaw state though he was not present at the last session, yet he stood and was "told that nothing had been done but the n of officers and routine business." Yet your report s that the list of Colleges was again (notwithstanding the previous reviews) "referred back to the Committee to ised and was again presented to the Association; was led and accepted."

he conclusions I am compelled to arrive at, from all the ony given in the letters of Drs. Wright and Wardlaw,

who declare that the University of Maryland Dental Depa
ment was not omitted from the list of Dental Colleges who
diplomas were to be recommended to the various State Boar
(the former being a member of the Committee appointed
prepare said list of Dental Colleges), are—that you have eith
confounded the proceedings of the Second Session of your Ass
ciation with those of the Third Session unintentionally; or, th
advantage was taken of the absence of several of the represe
tatives who were present at the former sessions, to injure o
Dental Department without any just cause.

Respectfully, &c.,
FERDINAND J. S. GORGAS,
Dean of University of Maryland Dental Departme

WHAT COCAINE TO USE.—There are many brands
cocaine in the market, and many physicians have found to th
annoyance that some are inert and some very irritating wh
applied to a sensitive membrane.

It may, therefore, be of service to physicians to learn t
experience of Dr. Dudley S. Reynolds, editor of *Progre*
who in the July, 1888, number expresses himself as follows:

"The medical profession has about settled its estimate
the therapeutical value of muriate of cocaine, but it is, unha
pily, no easy matter to decide upon the most uniformly relia
source of supply. The editor of *Progress* had about conclud
Merck's was the only reliable product, when recently he w
induced to make trial of that produced by Parke, Davis & C
A fresh sample of ten grains was dissolved in five drachms
distilled water, to which was added one drop of liquid carbo
acid. One drop of this instilled into the eye of a man fro
whose cornea a foreign body was to be removed, produc
complete anæsthesia in three minutes, so that incision of t
inflamed cornea, and turning out of the piece of offendi
metal was not felt by the patient. Twenty other similar exp
iments yielded similar results."—*Ex.*

ERSITY OF MARYLAND.

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R. LOMBARD AND GREENE STS., BALTIMORE.

SEVERN TEACKLE WALLIS, LL. D., Provost.

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ARRIS, M. D., D. D. S., Professor of Operative and Clinical Dentistry.
MILES, M. D., Professor of Physiology.
TIFFANY, M. D., Clinical Professor of Oral Surgery.
CHAEL, M. D., Professor of Anatomy.
OALE, Ph. D., Professor of Chemistry and Metallurgy.
ON ATKINSON, M. D., Professor of Materia Medica and Therapeutics.
LER, M. D., D. D. S., Demonstrator of Mechanical Dentistry.
STEEL, M. D., D. D. S., Demonstrator of Operative Dentistry.
ARLAN, M. D., Demonstrator of Anatomy.

DAVIS, M. D., D. D. S.	ELMER J. WISHERD, M. D., D. D. S.
AND GROSHANS, D. D. S.	RALPH C. PURNELL, M. D., D. D. S.
ON BEADLES, D. D. S.	NEWTON W. DENTON, D. D. S.
A. RAMBO, D. D. S.	HARRY H. PHILLIPS, D. D. S.

sistant Demonstrators of Operative and Mechanical Dentistry.

. CRAIGHILL, M. D.	HIRAM WOODS, Jr., M. D.

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k	Md	" W. W. Allport	Ills
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lm	Ala	" W. W. Evans	D. C
Winkler	Ga	" L. G. Noel	Tenn
kerson	Md	" V. E. Turner	N. C
e	S. C	" George W. Field	Eng
ay	Penna	" W. C. Wardlaw	Ga
owell	Md	" A. F. Claywell	Tenn
rner	Va	" George B. Steel	Va
Wood	Va	" Henry C. Jones	Va
Chewning	Va	" W. S. Carruthers	Texas
ight	S. C	" Daniel McFarlan	D. C
Harban	D. C	" A. G. Bouton	Ga
Henley	Va	" Thomas H. Davy	Md
ss	D. C	" B. H. Teague	S. C
Rice	Conn	" Wm. B. Wise	Va
enter	Ga	" S. Dwight Hodge	Vt
ardin	Va	" C. P. Baird	Tenn

---

times during the Annual Sessions a number of the Corps of Clinical
ll hold Clinics and deliver Clinical Lectures.

since its organization has added to the reputation and prosperity of this
ntal School, until now its graduates, in almost every part of the civilized
eting with the success that ability will ever command. The past session
uccessful one in number of matriculates ever held; and visiting dentists
of this country have expressed themselves as being astonished and grati-
bility shown by the students when operating upon patients in the
orming one of the departments of one of the oldest Universities in this
ploma is everywhere recognized and honored.

ction in both operative and mechanical dentistry is as thorough as it is
ke it, and embraces everything pertaining to dental art. The advantages
eral and oral surgical clinics, to which the dental students are admitted,
ll the lectures of the University, afford, cannot be overestimated. The
ds of patients annually treated in the University Hospital, which is well
the largest Hospital in Baltimore, afford an abundance of material for
rmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest ar
plete structures of the kind in the world. The Infirmary is lighted by
large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sunday
entire year for the reception of patients; and the practice for dental stu
creased to such an extent that all the students during the past session
abundance of practical work in both operative and prosthetic dentistry
Books showing to the credit of many of them hundreds of gold fillings
Infirmary patients, besides other operations. This means for practical in
already assumed such large proportions that the supply has been beyond
the large classes in attendance during the past sessions.

The exceedingly large number cf patients for the extraction of teeth
facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorou
instruction in the theory and practice of dentistry, the clinics in the Un
pital enable the Dental equally with the Medical Students to become fam
diseases and operations of Practical Surgery, excisions of jaw, parti
tumors, cancerous or benign, of various parts of the buccal cavity; plast
for the restoration of cheek, lips, etc., may be mentioned as having be
class during the year. The induction of anaesthesia by means of diffe
ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in
cannot fail to be of use to the student of Oral Surgery. Junior as w
students are afforded every opportunity for practical instruction in both
mechanical dentistry.

The Lecture Halls in the University Buildings are large and well
every facility will be afforded for practical and theoretical dental instruc
strations in Anatomy, Physiology and Pathology, (for which an abundanc
is furnished **free of charge**,) also form an important part of the regular
Dissecting Room is large, well ventilated and lighted, and the Demonstra
cal Anatomy passes much of his time in assisting the students and di
labors. **Dissecting Material is furnished in abundance, free of ch**

Qualifications for Graduation: The candidate must have atten
courses of lectures of five months each in different years at the **Regula**
Sessions in this institution. The following, however, will be considere
valent to an attendance on one course of lectures in this College:—One
reputable Dental College; graduation in a reputable Medical College with
dental pupilage in a dental infirmary. The student meeting either
requirements will have the privilege of presenting himself as a candida
ation at the end of but one Course of Lectures. The matriculant mus
English education; a diploma from a reputable literary institution, or o
of literary qualifications will be received instead of a preliminary exam
students, both juniors and seniors, have equal advantages in operative an
dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department o
sity of Maryland are required to attend but **one session** at the Univers
Medicine prior to presenting themselves as candidates for the degree
Medicine." (See Catalogue.)

The **Regular** or **Winter Session** will begin on the 1st day of Octo
will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence i
continues until the regular Session begins. Students in attendance on
Session will have the advantages of all the daily Surgical and Medical
University.

The Fees for the Regular Session are $100, Demonstrators' Fees inclu
lation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissectin

For Summer Session, no charge to those who attend the following W

Beneficiary.—A Beneficiary student will be received from each
recommendation of the State Dental Society, on the payment of half
fees. Board can be obtained at from $3.50 to $5 per week, according to q

The University Prize and a number of other Prizes will be specified
Catalogue.

Students desiring information and the annual Catalogue will be ca
full address and direct their letters to

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Dean of the Dental Department of the University of Mary
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I have received successively at the Six World's Fai
Highest Award for ARTIFICIAL TEETH; *this being th*
important branch of my business and all that I exhibited.

The greatest proof ever extended for Superiority to any r
, acturer of ***PORCELAIN TEETH,*** *for their Strength, Adaj*
and Natural Life-like Appearance, was received by me throu
Report of the Judges; Centennial International Exhibition 18

EXTRACT

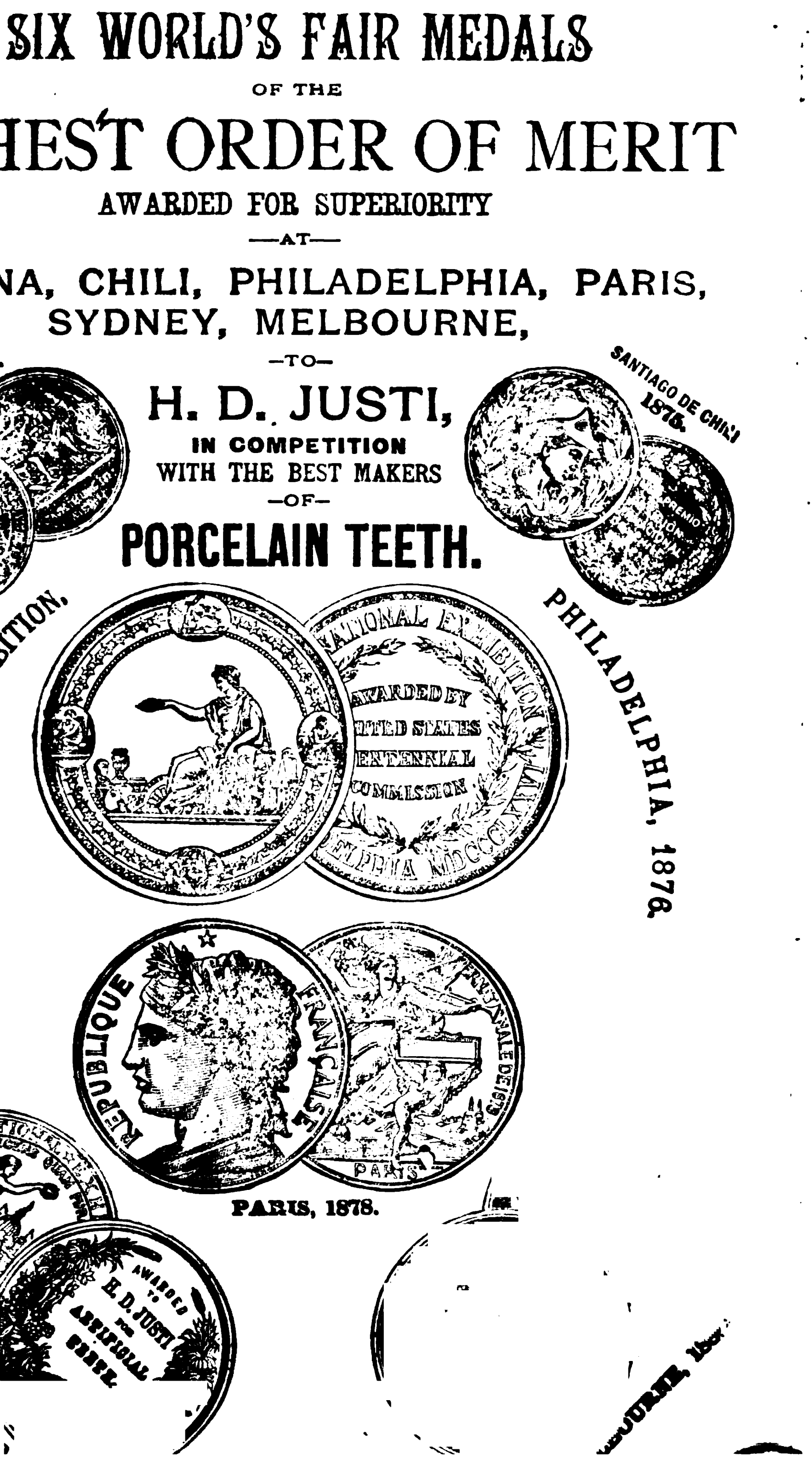
FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XXI

"H. D. Justi EXHIBITED NOTHING BUT TEETH, but his displ
beautiful in the extreme. In color, translucency and texture, they
that could be desired; they were a faithful reproduction of the phys
characteristics of the natural organs, both to the individual teeth and r
to the entire set. Their conformation with reference to close and eas
tation to the maxillary arch showed careful study of the needs of both
and operator. Their various and numerous deviations from uniformity
and outline, simulating the irregularities of nature, was so perfect th
in the mouth no suspicion of their artificial nature would be entertained
disposition of tooth-material was so skillfully managed as to secure the
amount of strength with the least bulk; and the insertion of platinu
was so arranged as to render their displacement an almost impossible ac

H. D. JUSTI,

BRANCH: *PRINCIPAL DEPOT:*

66 E. Madison St. Chicago. **1301 & 1303 Arch St. Phil**



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AWARDED FOR SUPERIORITY

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NA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,

—TO—

H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.

Porcelain Teeth

Beginning at Vienna, in 1873, where I made my first
I have received successively at the Six World's F
***Highest Award for ARTIFICIAL TEETH**; this being*
important branch of my business and all that I exhibited.

The greatest proof ever extended for Superiority to an
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H. D. JUSTI,

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66 E. Madison St., Chicago. (6) 1301 & 1303 Arch St., Phila

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—TO—

H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.

SANTIAGO DE CHILI
1875.

TION,

PHILADELPHIA, 1876.

PARIS, 1878.

ELBOURNE, 188

AINSWORTH'S RUBBER-DAM PUNCH

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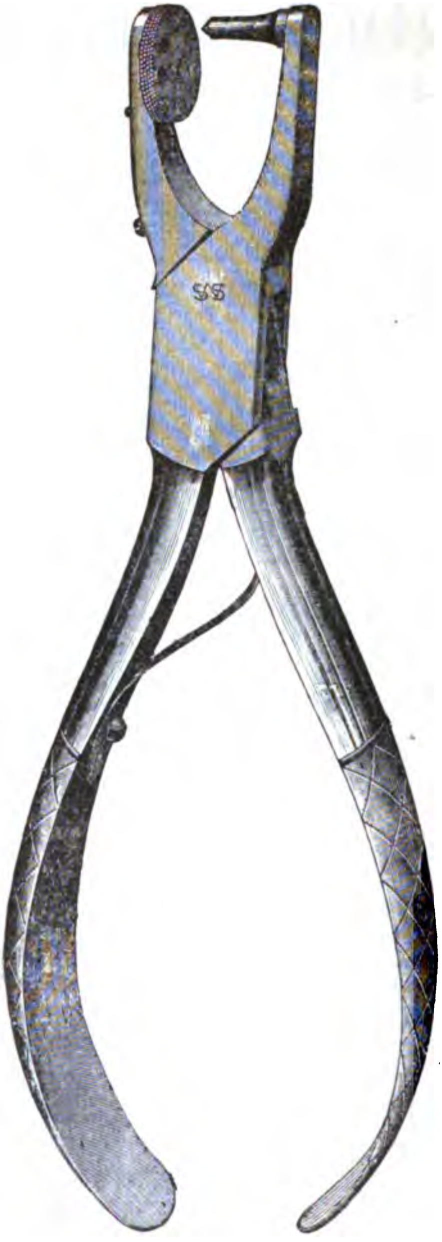

In the Ainsworth Punch a coned point cuts the r against a perforated die h four holes of graded sizes the necks of the different The perforation is thus clean and sharp and the ri the dam tearing during its a ment reduced to the mini Both the point and the di made of hardened steel, an die is readily rotated to brin desired hole in position.

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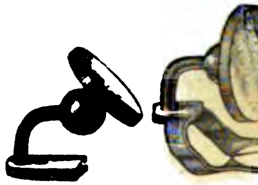

These Reflectors are for at ment to rubber-dam clamp that while providing the ope with a strong light, both are left free for manipul The left-hand cut shows method of attachment. Th vantage to be derived from use of these appliances, espe in operations upon posterior ities in molars, will be seen glance. By means of a ball the mirror can be adjusted to centrate the light upon the c or any portion of the mout quired. Two sizes, respect ½ inch and ¾ inch in diamete made, which it is believed meet all requirements.

Price, either size, Plain Glass..............................$2.0
" " " Magnifying Glass..........................2.5

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and after August 1, 1888, until further notice, ces of our Gas Cylinders will be as follows :

gallon Cylinders, . . . each $6.00
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se reductions, with the recent cut in Nitrous will make the prices of Cylinders, filled and l, as follows :

inder, with 100 gallons of Gas . $8.00
" " 500 " " . 25.00
illing 100-gallon Cylinder . . 2.00
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icial Crown- and Bridge-Work.

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h that is new in practical devices is here presented, together with what found valuable in the methods published by others in the dental

hose interested in Crown and Bridge-work (and who among dentists this volume will be indispensable, as within its covers are to be found ctical directions by which, with the exercise of a little ingenuity in n, any suitable case can be treated.

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Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

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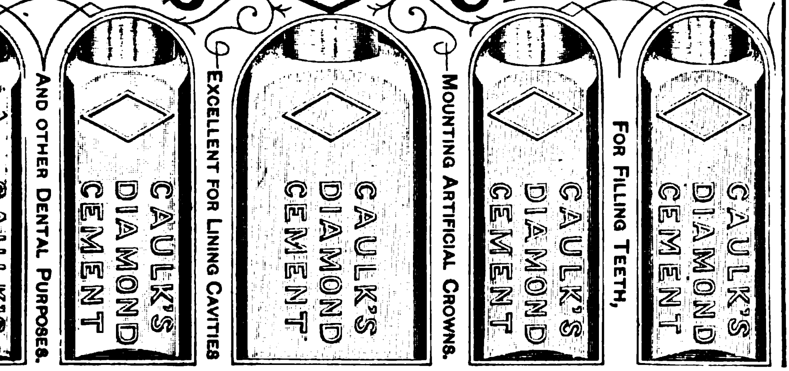

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tly improved. There is nothing equal or superior to it. Is of a peculiar color. When properly manipulated with our Purified Mercury it will r under all circumstances.

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ntists are using these Materials throughout the World. What bettdr evidence do you wish of their Superiority and Excellence?

rders for Dental Supplies will receive prompt attention.

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MEDAL AND DIPLOMA AWARDED BY THE

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RTIFICIAL TEETH.

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WILMINGTON, DELAWARE.

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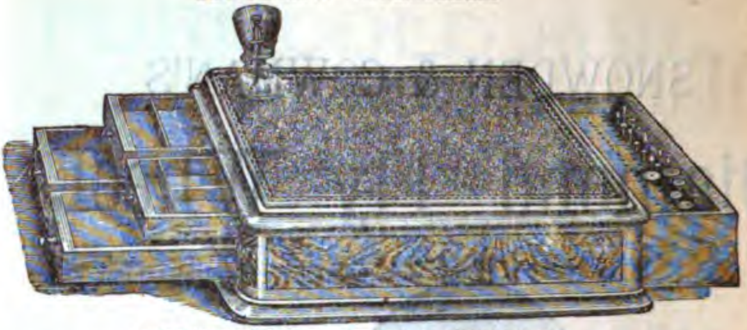
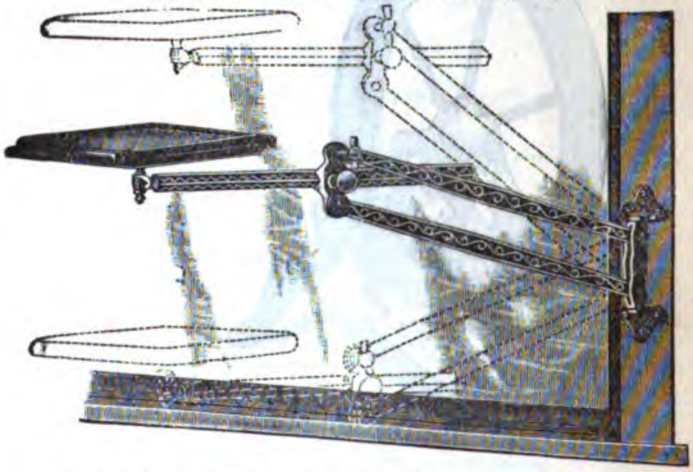
laving been fully recognized as producing a ***Superior***
th at a very moderate ***price,*** now further avail themselves
is medium through which to call the attention of the Dental
ssion to their manufacture. They have now brought the
acter of their ***moulds*** to a legitimate form in design and
truction, and the ***shades*** of their teeth to that variety
t affords the Dentist the opportunity of approaching the
ural enamel. A very critical examination is solicited
price and quality. Send for price-list.

For Sale by Dental Dealers Everywhere.

ALLAN TABLE.



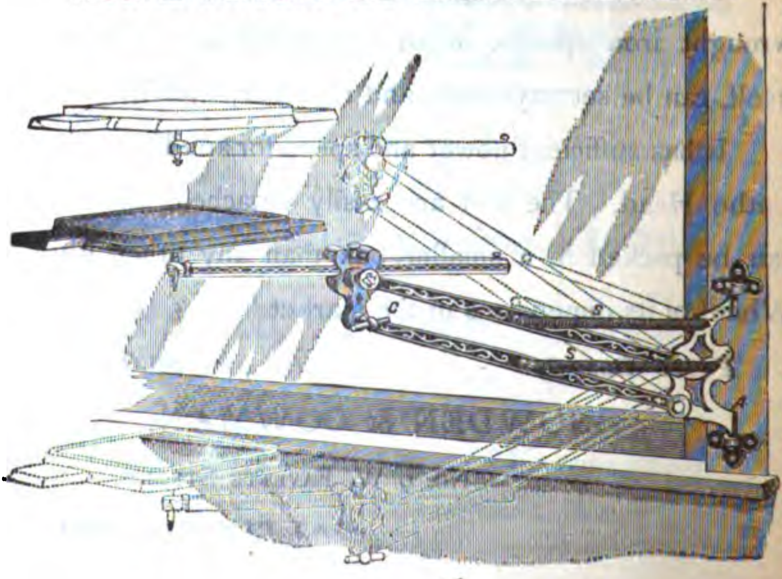
STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides

VENEERED SIDES $8.00

CONE JOURNAL BOSS BRACKET.



orrison Bros.,

NASHVILLE, TENN.

—KEEP A FULL STOCK OF—

te's and Justi's Teeth,

—ALSO—

BLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

EVERY LEADING BRAND OF

LD, AMALGAM, and CEMENTS

KEPT CONSTANTLY ON HAND

—THE ATTENTION OF—

stern and Southern Dentists

IS CALLED TO OUR LARGE STOCK OF

Instruments and Materials

OF ALL RELIABLE MANUFACTURERS

ful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

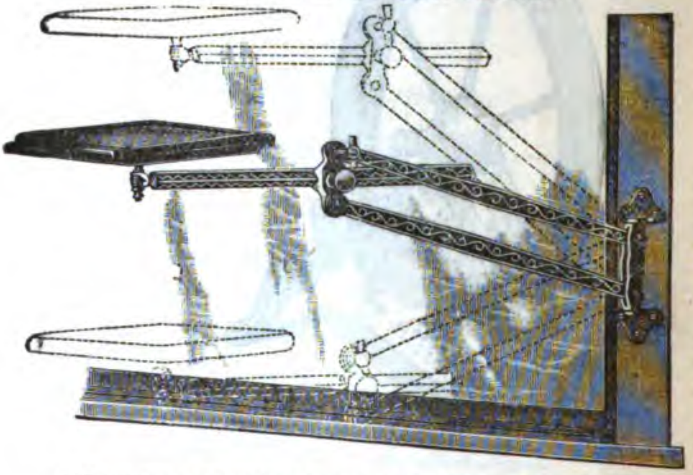
DENTAL HEADLIGHT,"

dy Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

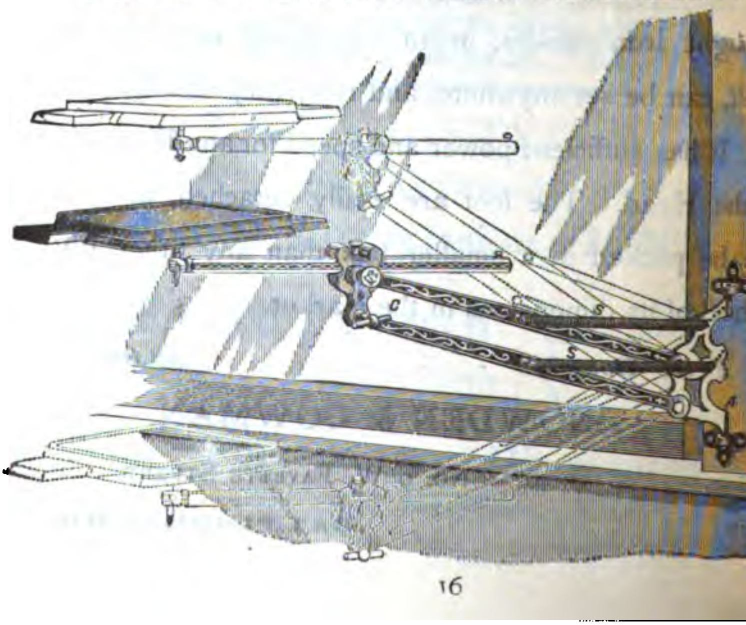
ALLAN TABLE.

STUDENT BRACKET.



This is the best Bracket in the market for the

CONE JOURNAL BOSS BRACKET.



orrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

hite's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

estern and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

reful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

rterly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE. - - - - -	15 Cts.	10 Cts.
For $15 00 net Cash, - - -	14 "	9½ "
" 25 00 " - - - - -	13 "	9 "
" 50 00 " - - -	12½ "	8½ "
" 100 00 " - - - - -	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN
RETAIL PRICE, - - - - -	15 Cts.	10 Cts
For $15 00 Cash, - - -	14 "	9½ "
" 25 00 " - - - - -	13 "	9 "
" 50 00 " - - - - -	12½ "	8½ "
" 100 00 " - - - - -	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of th following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co

Price per. set of 14, - - - - - - -	$ 1 0
" 11 " " - - - - - - - - -	10 0
" 29 " " - - - - - - - -	25 0
" 60 " " - - - - - - - - -	50 0
" 92 " " - - - - - - - -	75 0
" 125 " " - - - - - - - - -	100 0

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMORE.

ental Depot,

ESTABLISHED 1856.

NOWDEN & COWMAN,

MANUFACTURERS OF

ntal Chairs, Lathes, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per oz.	½ oz.	¼ oz.	⅛ oz.
& Sons,	$32.00	$16.00	$8.00	$4.00
's	30.00	15.00	7.50	4.00
Co's.	30.00	15.00	7.50	4.00
hite's, ¼ Century,	30.00	15.00	7.50	4.00
" Globe,	30.00	15.00	7.50	4.00
" 1000 Fine,	30.00	15.00	7.50	4.00
Villiams, Cylinders, A,	30.00	15.00	8.00	4.00
" " B,				
" Rect. Pellets,				
" Standard,				
Crystal,	32.00	16.00	8.00	4.00
van & Co.	29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,			5.60 per 1-5 oz.	
" "			2.90 per 1-10 oz.	

TIN FOIL.

Co's—Nos. 4, 6, 8, and 10, - - -	40 Cents per Book.
hite's, - - - - - - -	30 " " "
" Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN,

No. 9 West Fayette Street Baltimore.

PORCELAIN TEET

We keep on hand a large assortment of Teeth of the follow
Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

		GUM.	PL
RETAIL PRICE.	- - - - -	15 Cts.	10
For $15 00 net Cash,	- - -	14 "	9½
" 25 00 "	- - - - -	13 "	9
" 50 00 "	- - -	12½ "	8½
" 100 00 "	- - - - -	12 "	8

H. D. JUSTI'S.

		GUM.	PL
RETAIL PRICE,	- - - - -	15 Cts.	10
For $15 00 Cash,	- - -	14 "	9½
" 25 00 "	- - - - -	13 "	9
" 50 00 "	- - - - -	12½ "	8½
" 100 00 "	- - - - -	12 "	8

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Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing

Price per. set of 14,	- - - - - -	$ 1
" 11 " "	- - - - - - - -	10
" 29 " "	- - - - - - -	25
" 60 " "	- - - - - - - -	50
" 92 " "	- - - - - - -	75
" 125 " "	- - - - - - - -	100

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMO

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ⅛, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED
—BY—

cago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

AMALGAMS.

Townsend's	$2.00 per
Chicago Refining Co's	4.00 "
Caulk's Par-Excellent Alloy,	3.00 "
Standard Dental Alloy,	6 00 "
Lawrence's	3.00 "
Arrington's	2.50 "
King's,	3.00 "
Sterling Amalgam,	3.00 "
Chase's Alcohol-Tight,	3.00 "
Olivers Amalgam,	3.00 "
" White Amalgam,	5.00 "

CEMENTS.

Roman Cement, best in the market,
Agate Cement, in 1 oz. Boxes,
" " " ½ "
Weston's Insoluble Cement, ½ oz.,
Dr. Flagg's Plastic Enamel, per Pk'g,
Fossiline, " "
Metcalf's Cement, " "
H D. Justis's Insoluble Cement,
1 oz. Package, 1, 2, 3, 4 Colors,
½ " " any above "
H D. Justis's Acme Cement,
One oz. Package,
Half " "
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge
" C. N. Pierce Phos. Zinc. " "
" T. O. Oliver's Oxy Phos, " "
" Smith's " Chloride, " "
Houghtons's Os-Artificial, " "
Poulson's Mineral Plombe, " "
Dawsons's Mineral Cement " "
Caulks's Diamond "
Per Package, 2 Colors,
" " 1 "
Caulk's Hydraulic Pebbles, large Pk'ge,

DENTAL RUBBER.

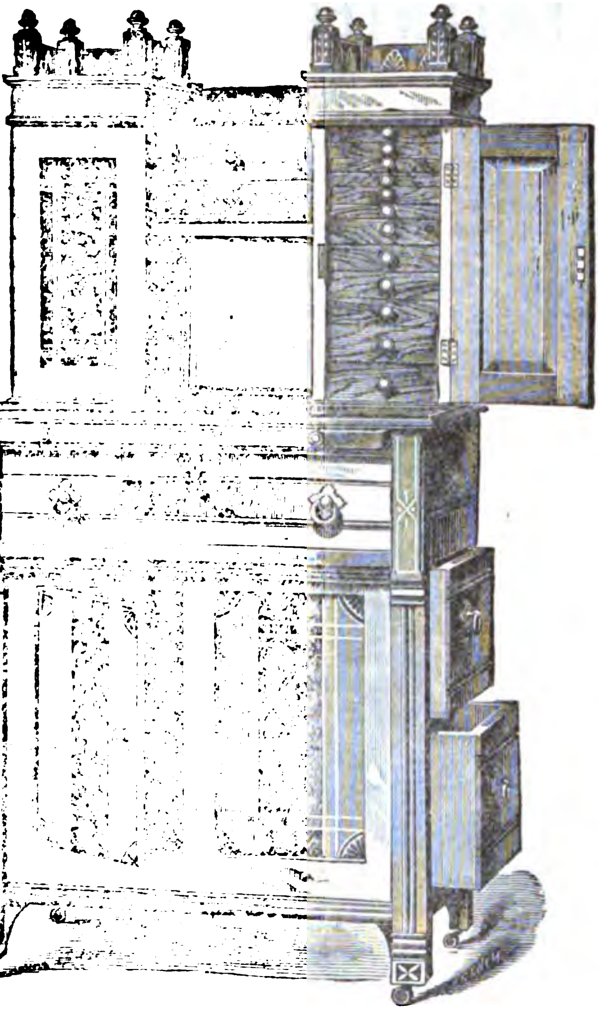
Ram's Horn Rubber,	per lb.
Sam'l S. Whites' No. 1 Improved,	"
Holdfast Rubber,	"
Doherty No. 1,	"
" " 2,	"
Star Rubber,	"
Sam'l S. White's Bow Spring,	"
Whalebone Rubber,	"
Sterling Rubber,	"
Black Rubber	"

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,
Sam'l S. White's	"

SNOWDEN & COWMAN
9 West Fayette Street Balti

roved Cabinet Case No. 10.



net Case is made of black walnut, hard oil fin.sh. The panels are
er, and the mountings are all nickel plated. The total height is
es; width 31 inches; depth 20 inches. The upper portion has 12
x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches
or closes over all these drawers. On the opposite side is space
ith adjustable shelves for medicines. Connecting the two parts
drawers, 10¼ x 12½, by 3 inches deep. Below these drawers is a
e mirror, 10 x 10. The lower portion contains one drawer in
, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches
vith felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep.
closet, 20 x 16, 12 inches deep, with shelf.

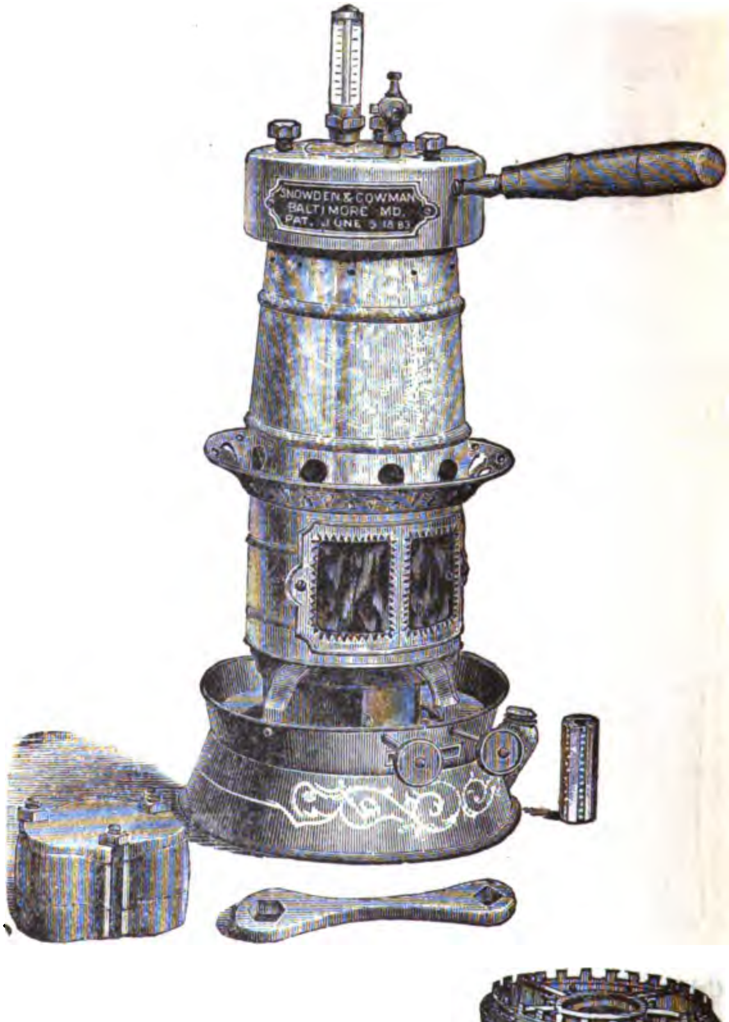
RICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	50.00.
" " Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, TOLEDO, OHIO.

: 29 Circle Street, INDIANAPOLIS, IND.

SNOWDEN & COWMAN'S

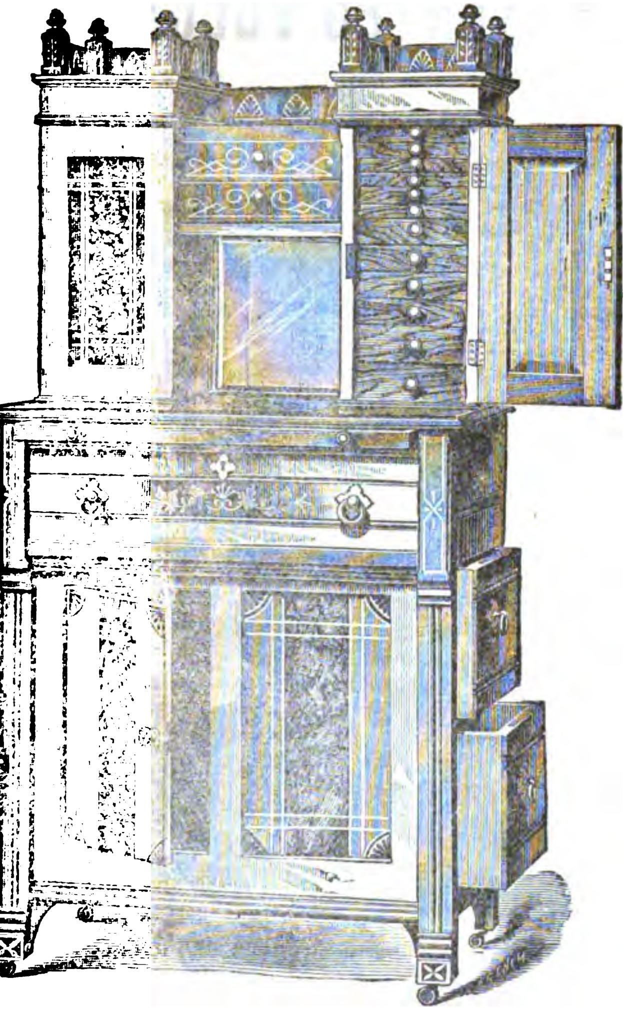
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

proved Cabinet Case No. 10.



binet Case is made of black walnut, hard oil finish. The panels are
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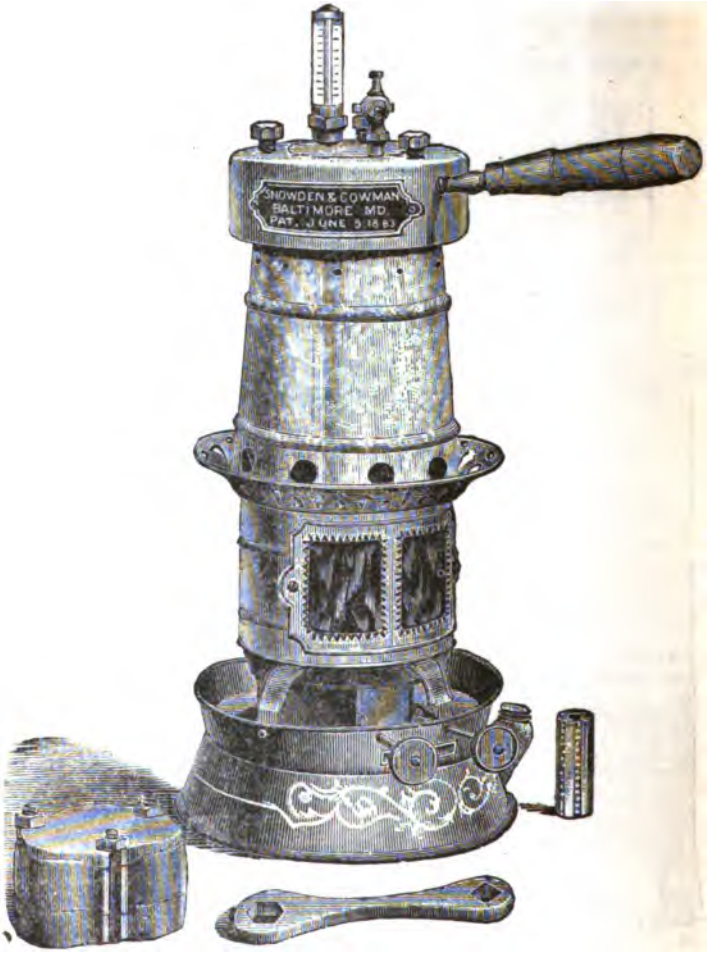
½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches
door closes over all these drawers. On the opposite side is space
with adjustable shelves for medicines. Connecting the two parts
2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a
late mirror, 10 x 10. The lower portion contains one drawer in
16, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches
d with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep.
s a closet, 20 x 16, 12 inches deep, with shelf.

PRICE, with Wood Top (Boxing Free)	- -	$45.00.
" With Italian Marble Slab, (white)	-	50.00.
" " Knoxville Marble, (pink)	-	50.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.
H: 29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

 offering our New Patented Vulcanizer to the Dental Profession, we do so with nowledge that it far supersedes anything of the kind now before it in strength, y, durability and simplicity.

he boilers are made of four pound copper and will stand a steam pressure five as great as it is required to vulcanize at 320°. They are tinned inside, which pre- the copper from corroding, if kept clean. The Vulcanizers are made larger than rdinary ones, so as to take any flask in the market. The bolts are so arranged he pressure from them comes directly on the packing and makes it steam tight. he movements of unloosening the top and taking the Vulcanizer apart are positive uick. The movement of the collar in unloosening is only one-sixth of the circum- ce of the boiler; it is from left to right: and is guided by lugs or stops, thereby away with the old method of unscrewing top from boiler, which often gives le, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

fter long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted we consider a safe device. It consists of the seat, or body, stem, lever and weight. at any time the valve should leak, a slot will be found in the top of the stem to crew driver, by which the stem can be turned around several times and grind tight again.

EXTRACTS FROM TESTIMONIALS.

It surpasses any I have ever used or seen.—**Howard W. Hoopes, D. D. S.**

It is in our opinion the best in the market. For neatness and easy working, it is .—**Drs. Williams and Pennington.**

Your new Vulcanizer has been in use in my laboratory since first introduced and iven the greatest satisfaction.—**C. E. Duck, D. D. S.**

It gives me more satisfaction than any I have yet used. In strength, durability, nd quick working of all its parts, it excels.—**Thomas H. Davy, D. D. S.**

I have used your Vulcanizer regularly since its first introduction and it works to tire satisfaction. I consider it the best, safest and simplest. I am sure that any t who sees its easy workings will claim all I do for it.—**Bernhard Myer, D. D. S.**

For economy of time and ease of manipulation, it is superior to all I have seen or The facility of closing, cooling without resort to water, and opening, will be nized and appreciated by all as great improvements.—**C. E. Bierbower, D. D. S.**

Your Vulcanizer is the best and strongest I have used or seen. The advantages ening and closing are very simple and efficient, and with less trouble than any in arket, and I consider it a great acquisition to the mechanical department of try.—**Wm. B. Finney, D. D. S.**

DIRECTIONS FOR USING.

ULCANIZER.—Screw the handle into the cover, loosen the three bolts on the urn the handle from left to right, lift the cover and take off the cap. In returning p let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

AFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover putting it on, and until the cold air is driven out of the boiler, then lower lever, g weight about mid-way so as it will not blow off steam at 320°.

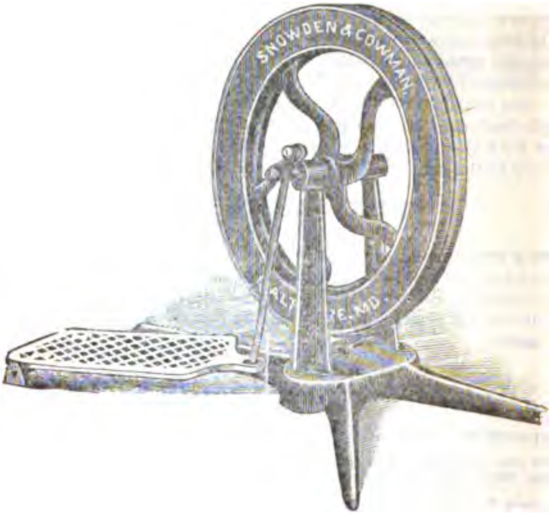
EROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the the first time allow it to stand about fifteen minutes, until the wicks are thor- y saturated, trim them evenly and take a small clip off of the corner of each fill the top tank with cold water, and the stove is ready for use.

he wicks must fill out the wick-tubes. Be careful to use the right size. Keep the tubes clean, and the wicks, when not lit, turned down below the top of the tubes, t the oil will not run down the outside of them. Keep the perforated tin clean he wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

*FLY WHEEL, No. 1, New


SNOWDEN & COWMAN.

This Fly Wheel weighs 30 lbs., with diameter wheel 15 inches. The stand is the stiffest and steadi of any driving wheel in the market. Owing to position of the feet and the peculiar arrangement of treadle, The wheel has an immense power and is ve light running. In boxing remove pin that conne treadle with rod and fold treadle by side of the whe Weight complete, 46 lbs.

Price Boxed, - - - - - - - **$8**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, M

nowden & Cowman,

W. Fayette Street, Baltimore, Md.

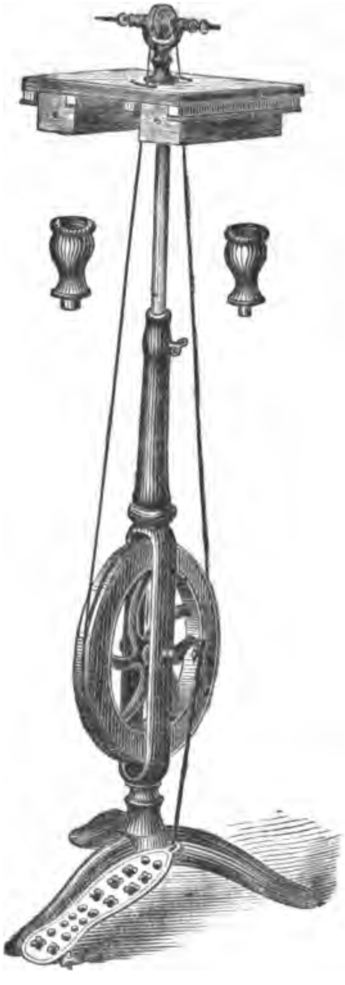
Manufacturers of the following articles :

Patented Vulcanizer, complete for Kerosene Gas, with two Malleable Iron Flasks, - -	18 00
d States Lathe—Long Spindle, - -	16 00
" " Short Spindle, - -	16 00
" " Stand and Cord, - -	12 00
ican Lathe, - - - -	15 00
' Extra Large Driving-Wheel, -	16 00
ond Lathe—Complete, - - - -	14 00
" Fly Wheel, - - - -	8 00
heel, No. 1, (New) - - - - -	8 00
ble Hand or Foot Lathe—Complete, -	6 00
" " " Without Foot Attachment,	5 50
rant Hand Fly-Wheel Lathe, - -	4 50
Fly-Wheel Lathe, - - - -	4 50
Lathe, - - - - - - -	4 00
ond Lathe Head—Polished Brass, - -	6 00
Table Head, - - - - -	5 00
Table Head—holes in base to screw to table, -	4 00
ican Lathe Head, " " " "	4 00
s and Handle—two Ladles and one Handle, -	75
sion Brackets—weight only five pounds, -	6 00
ble Head-Rests—weight only four pounds, -	5 00
t Portable Head-Rest, full nickel plated,	10 00
ing Lamps, - - - - - -	90
Press, No. 1, well made and very strong, improved	1 50
" No. 2, new, - - - - -	1 50
Moulds—broad base with handles, No. 1 -	2 25
" " " No. 2 -	2 75
" " " No. 3 -	3 25
's Moulding Flasks,—per set of 2, -	75
ts Case—with 8 medicine bottles,	8 00
" " 6 " " and lamp,	8 5
nnia Impression Cups—long handles, various styles and 27 sizes—each, -	

make no charge for Boxing any of the above goods.

R SALE AT ALL DENTAL DEPOTS

American Lath



This cut represents a
proved Lathe. It is made i
very best manner, and is su
for either the *Office* or *Labor*
It has a solid spindle—one e
which is a taper screw for bru
felt wheels, and also, a space
large corundum wheel. The
side of the spindle has a spa
a large corundum wheel a
screw to receive the chuck
which very small corundum w
can be placed.

It has a movable column
table, which is capable of
elevated ELEVEN inches, t
commodate the operator in ei
sitting or standing posture.

Either end of the spindle c
thrown towards the operato
more convenient, by the set s
at the top of the column.

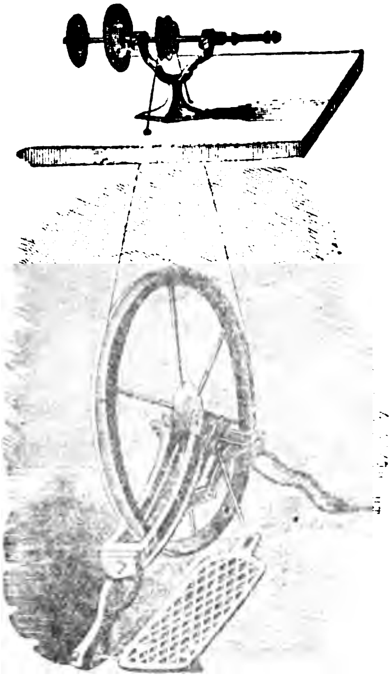
☞ We also make for this L
a Socket Spindle—similar to
U. S. Lathe Short Spindle.

Price ot	Lathe, as per cut, with two Chucks, -	$15 0
"	" with Socket Spindle, with two Chucks,	15 0
"	" with Extra Large Driving-Wheel,	16 0
'	Chucks, extra, - - - -	1

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltin

e Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

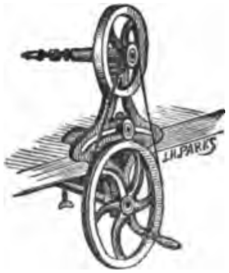
is fly-wheel is 18 inches in diameter, with wrought iron spokes, in an frame, complete in itself, can be set anywhere and runs very steady.

PRICE..$8 00

DIAMOND FLY WHEEL AND HEAD.

plete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.



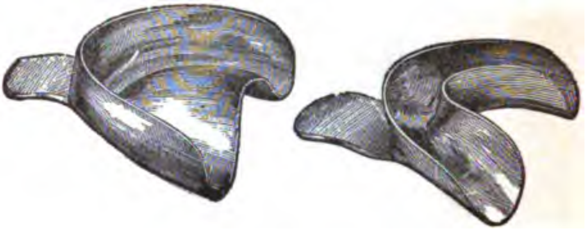
means of the quadrant, the spindle can be raised from, or lowered to able, and thrown from or nearer to the operator. The cord is tightened lots, and the lathe is silent; the spindle is of the best quality of steel brass washers and two chucks complete. Weighs only four pounds.

PRICE..$4 50

BRITANNIA IMPRESSION CUPS,

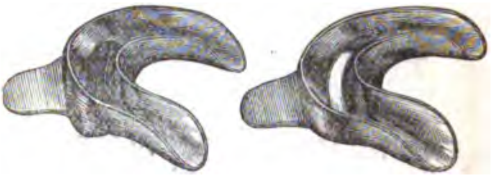
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



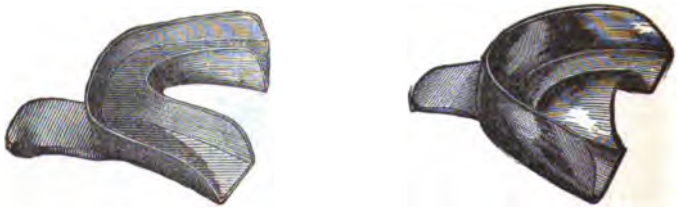
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



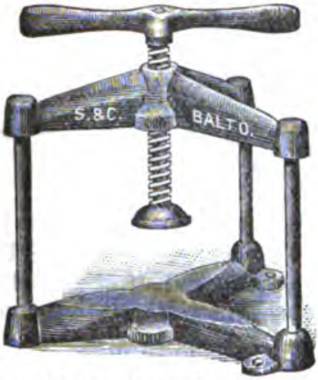
PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each....................25cts

SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

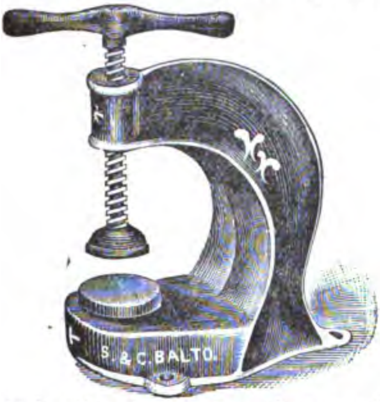
OWDEN & COWMAN'S
Flask Presses.

No. I, Old Style Improved.



Press is intended to close the flask after packing with
It is of great advantage, saving screws and flasks.
right rods are of wrought iron and the handle of the
an be detached. They are *well made* and *very strong*,
s been made larger, so that it will take any Flask in the
. Price, - - - - $1.50.

No. 2, New Style.



Press is made of cast iron, very heavy, with steel screw
tachable handle. It has a Pivot Plate to level up the
suring always a central pressure on the flask ; will take
sk in the market. Price - $1.50

BRITANNIA IMPRESSION CUPS,

LONG HANDLES.

We Manufacture the following Sizes and Varieties:

UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
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PARTIAL LOWER CUPS.

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PRICE............................Each...................**25cts**

SNOWDEN & COWMAN,
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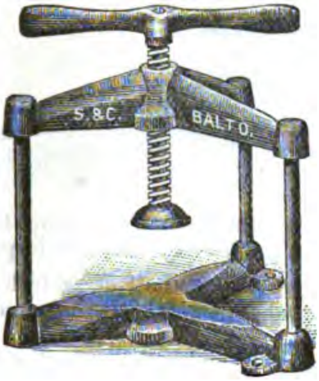
SNOWDEN & COWMAN'S

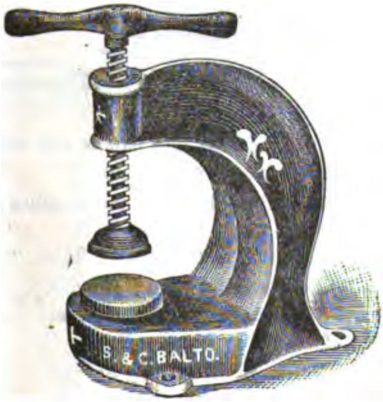
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Style.

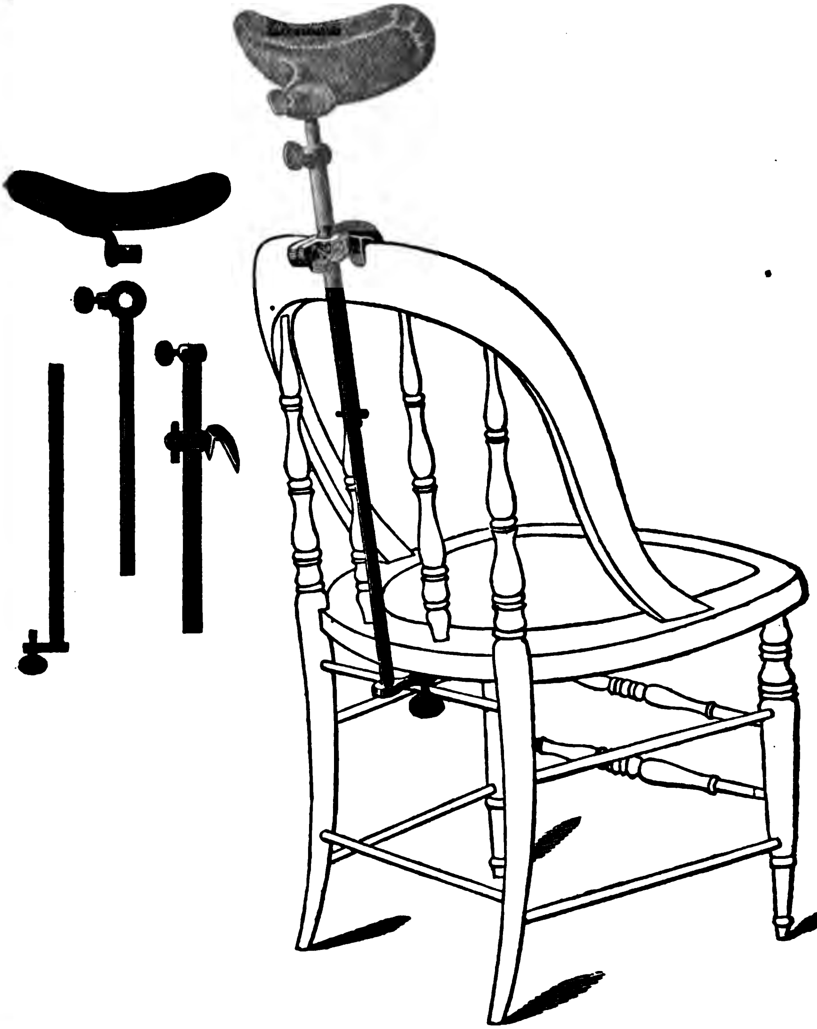


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price - $1.50

SNOWDEN & COWMAN'S

-IMPROVED-

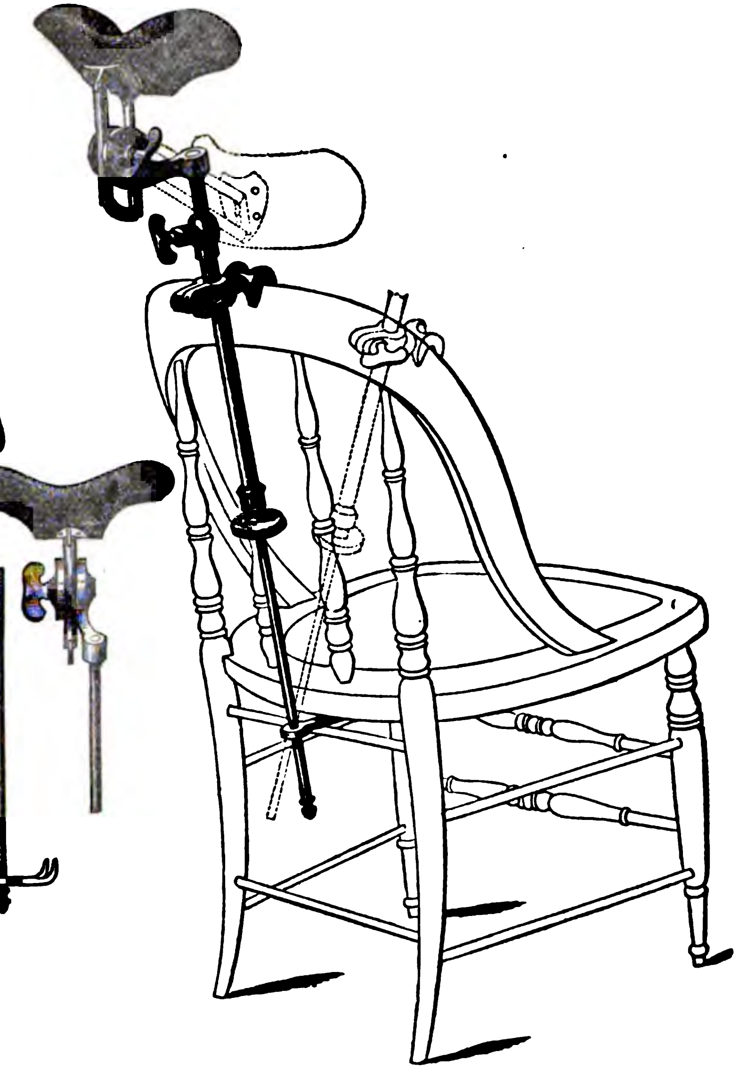
Portable Head-Rest



This Head-Rest can be attached to any chair, is very firm, and can be raised, l ered or moved backward or forward without interfering with the attachment to chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 0

SNOWDEN & COWMAN'S
—NEW—
rtable Head-Rest,



RICE, Full Nickel Plated, - - $10.00

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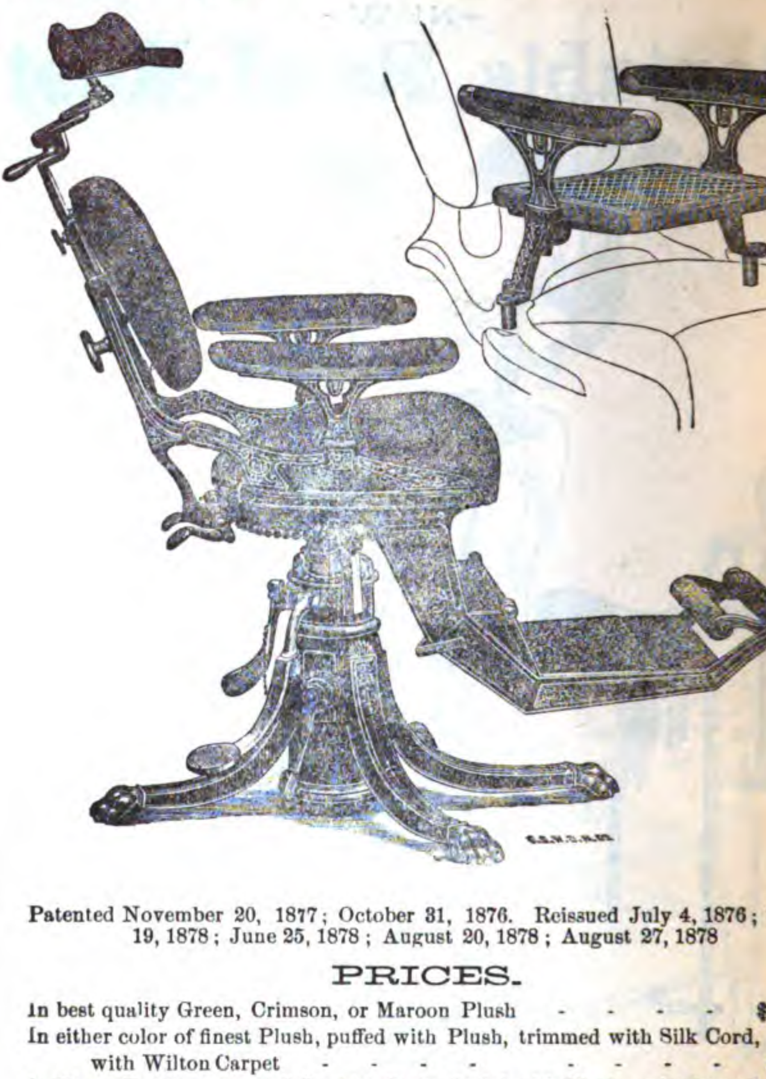
The Improved Wilkerson Ch



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876;
19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

PRICES.

In best quality Green, Crimson, or Maroon Plush - - - -

In either color of finest Plush, puffed with Plush, trimmed with Silk Cord,
with Wilton Carpet - - - - - - -

In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed
with Silk Cord, with Carpet to match - - - - -

In Crimson Plain Turkey Morocco or Leather - - - - -

In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco,
edged with Cord, Axminister Carpet on Apron and Foot-Rests -

BOXING FREE.

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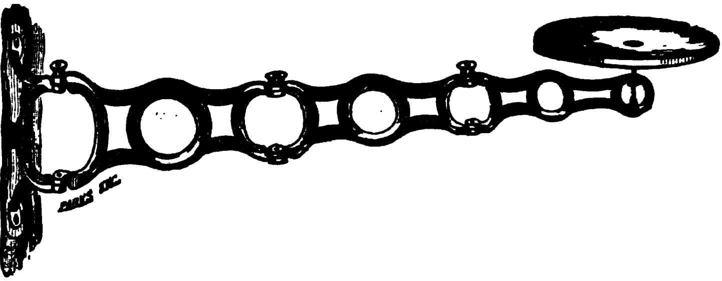
Snowden & Cowman's Extension Bracket.

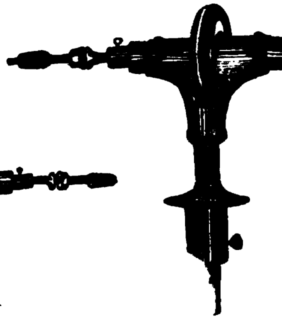


This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

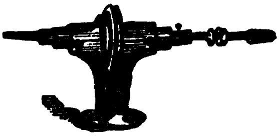
Price, Round Table as per cut, - - - - - - -	$6 00.
Square " with drawers. - - - - - - -	8 00

TABLE HEADS.

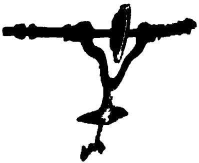
A.

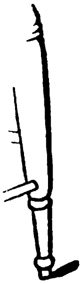


B.



C.





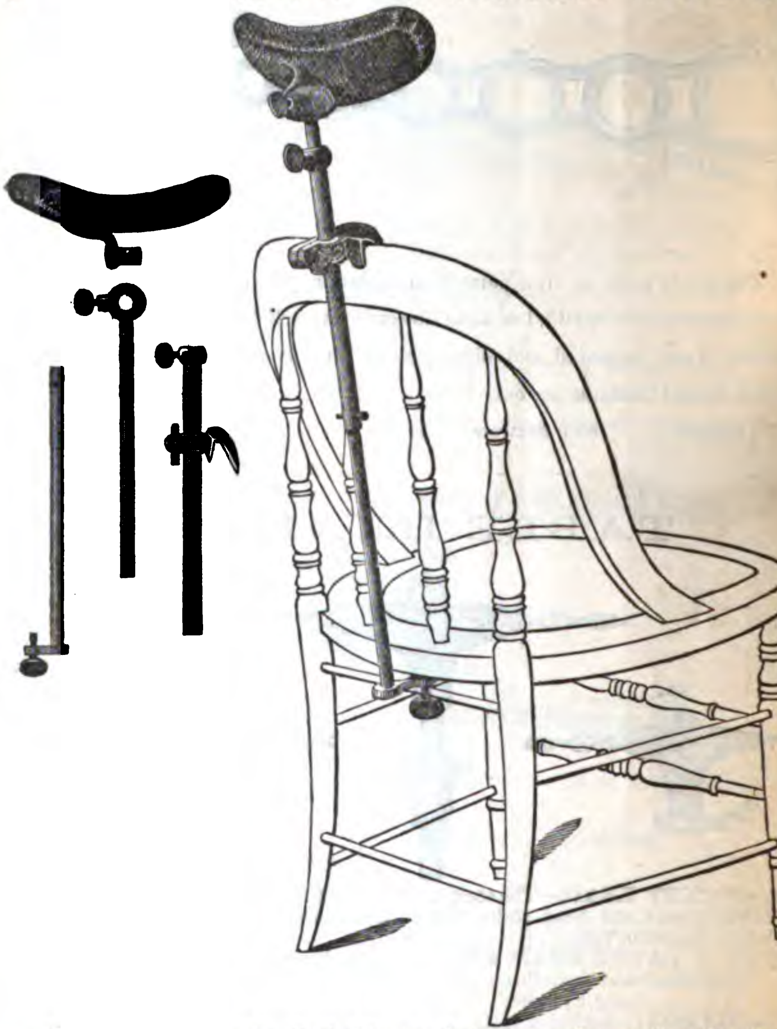
A.—SOCKET HEA
in the lower part, the
the height from the
B.—U. S. LAT
PRICE—
"
C.—DIAM

screws to the tabl
inches to tighte
the bas

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Res



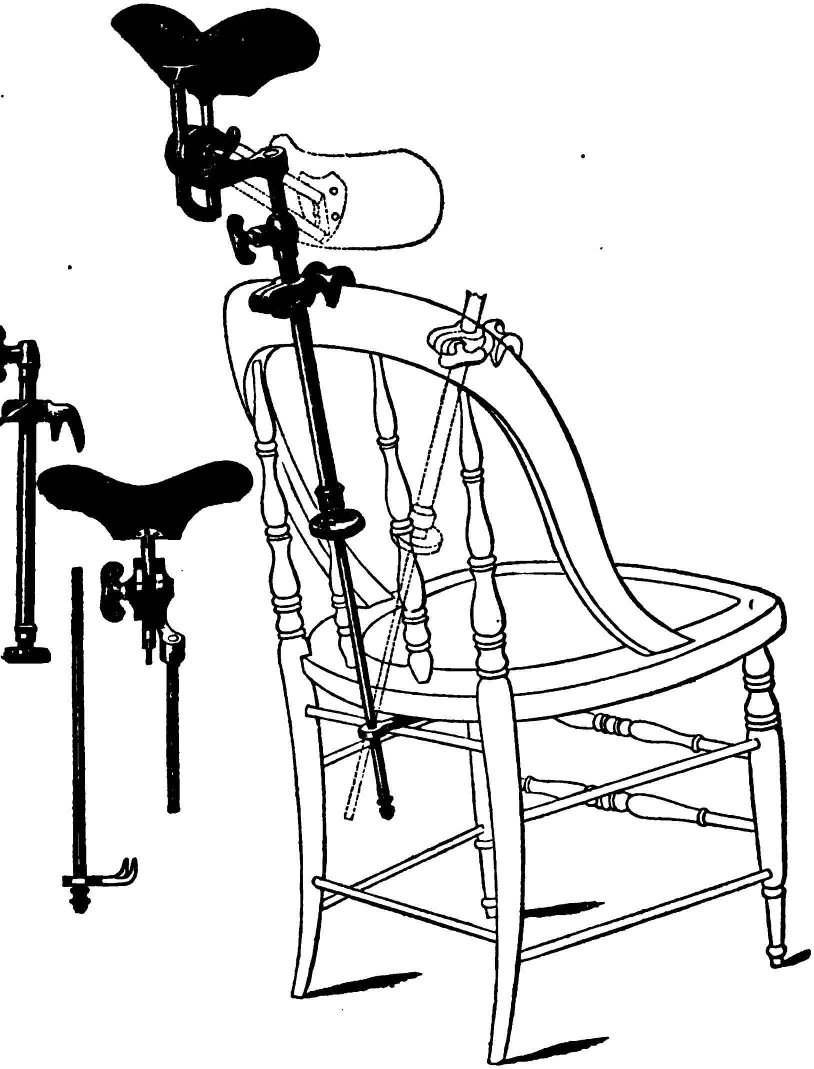
This Head-Rest can be attached to any chair, is very firm, and can be raise
ered or moved backward or forward without interfering with the attachment
chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

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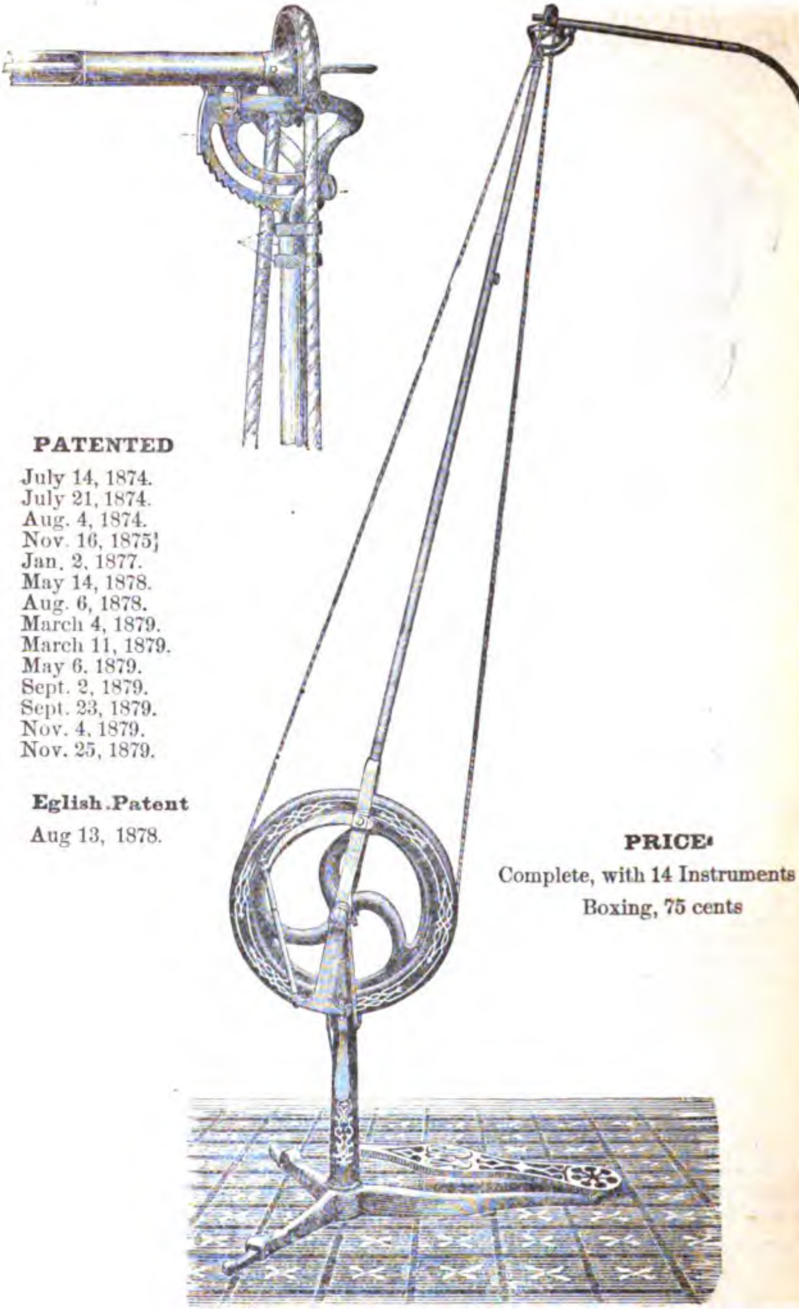

PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
Jan. 2, 1877.
May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6, 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish.Patent

Aug 13, 1878.

PRICE.

Complete, with 14 Instruments

Boxing, 75 cents

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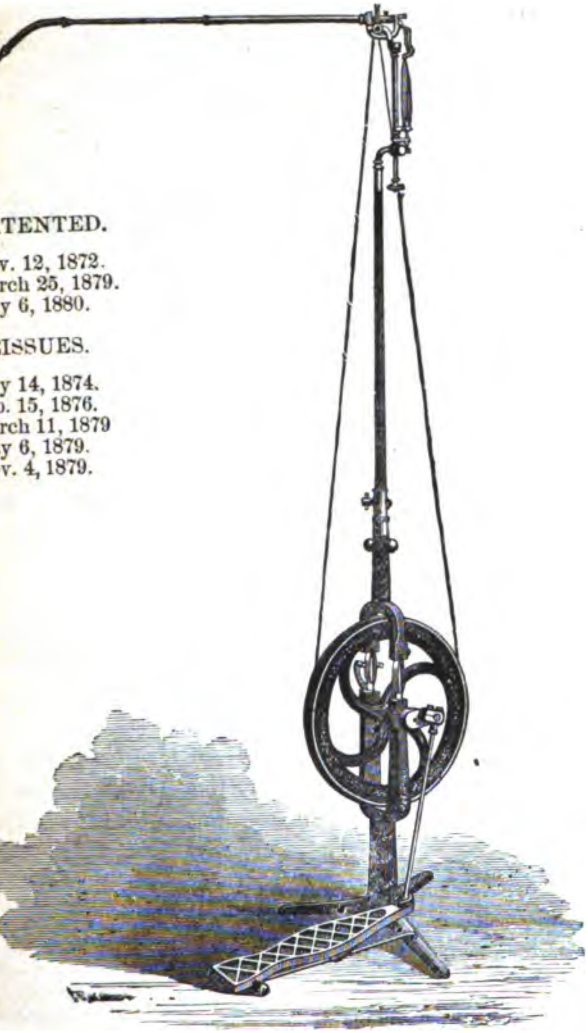
JOHNSTON DENTAL ENGINE.

TENTED.

v. 12, 1872.
rch 25, 1879.
y 6, 1880.

ISSUES.

y 14, 1874.
. 15, 1876.
rch 11, 1879
y 6, 1879.
v. 4, 1879.



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SNOWDEN & COWMAN'S

DENTISTS' CASE BOOKS,

For Recording all Operations in Dentistry,

WITH

TITLE PAGE, INDEX OR ALPHABET, and the pages numbered, printed on fine paper, with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,		$1 00
Two	"	1 75
Three	"	2 50
Four	"	3 25

☞ TRADE SUPPLIED.

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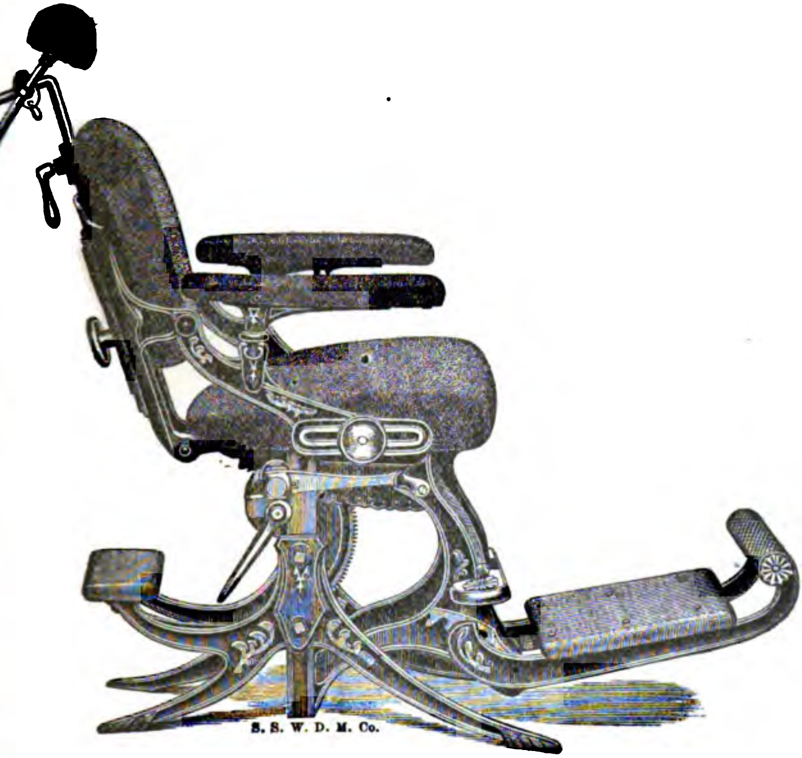


S. S. W. D. M. Co.

nted December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 83. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while ding a variety of essential movements, could be sold at a lower price than the kerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far sur- es anything heretofore offered for the money, the Cycloid is *the* chair. It is ngly built, and the finish and general appearance make it a desirable addition to ll-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is ked with great ease and rapidity. Should the crank by accident slip from the l the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator yet be of service to the patient.

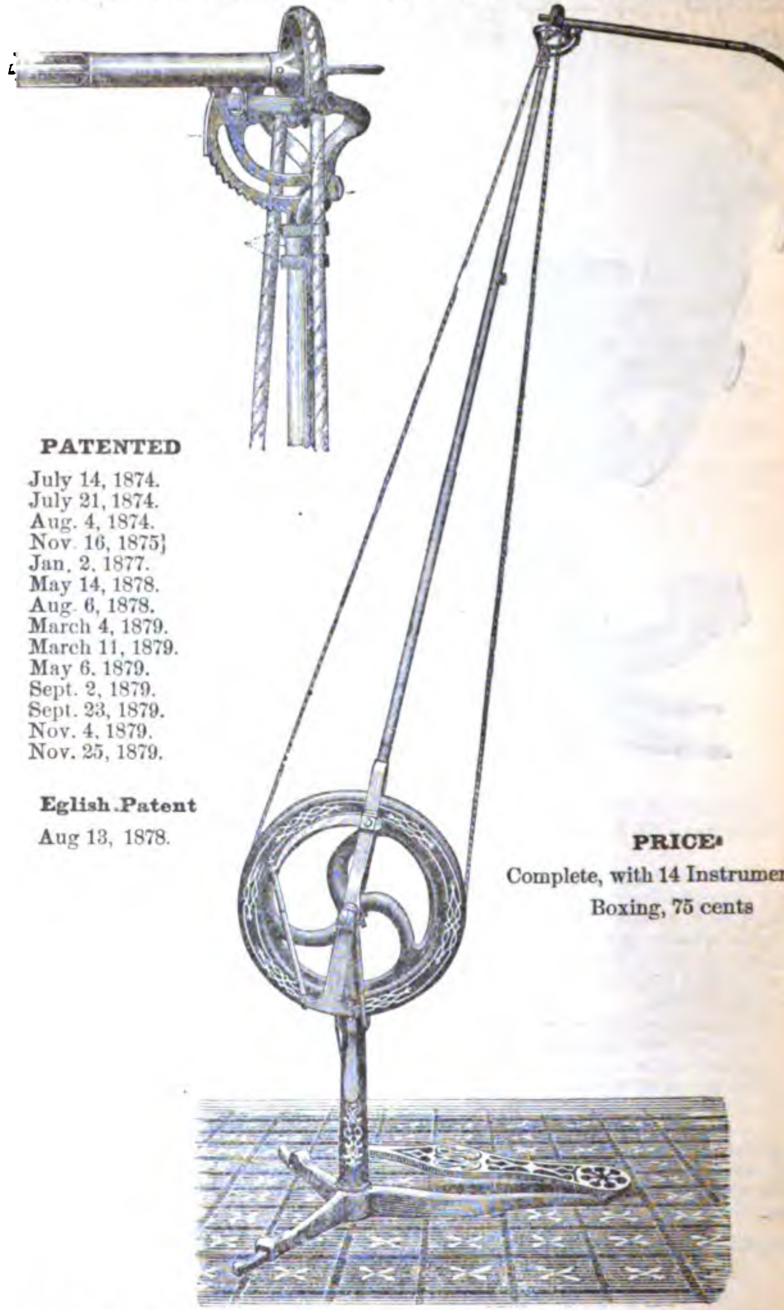
The foot-board can be adjusted in four positions, and a permanent support for oot of the operator is placed at the back of the base, the convenience of which be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the of the Chair.

Price, upholstered in Corded Material, - -	$	80.00
" " " Best Quality Maroon or Green Plush,		95.00

For Sale By SNOWDEN & COWMAN.

THE S. S. WHITE IMPROVED DENTAL ENGI



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Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish.Patent

Aug 13, 1878.

PRICE:

Complete, with 14 Instrumer

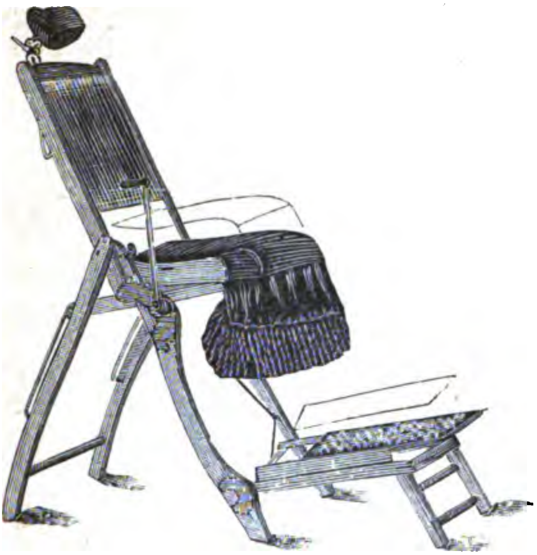
Boxing, 75 cents

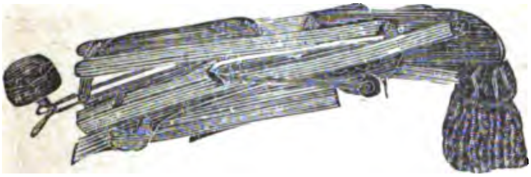
For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md

DR. HENKLE'S

rtable Folding Dental Chair.

Simplest, Lightest and Best Chair yet offered to the Profession.





eighs about forty pounds, according to finish. Can be folded into one compact space convenient for carrying in nd, making a package 34 inches long, 18 inches wide and es deep. Combines all the movements necessary in dental ions. Has been tested and approved by experienced s.

Price, with Perforated Seat and Back, $40.00.

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Established 1856

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THE NEW

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See Advertisements and Testimonials
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of this issue.

NOVEMBER. 1888.

THE

ERICAN JOURNAL

OF

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$2.50 PER ANNUM.

EDITED BY

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THE
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F. J. S. GORGAS, M. D., D. D. S.

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the people have been freed from quacks and imposit through whom they would otherwise suffer irreparable l The Executive Committee, also constituting the Boar Dental Examiners, has endeavored conscientiously to charge its onerous duties in behalf of the people and profession, though it has not always received the sup and encouragement it deserves—many dentists and m of the people think it hard, unfair and unjust that a stu who has passed through a dental college and receiv diploma, should be obliged to pass a subsequent exam tion by a Board of Examiners before he is allowed to p tice dentistry in the State of Georgia. But this only pl the dental college on a par with other colleges. A grad from Mucer University, Emery College, or any other l ary institution is not allowed to engage in teaching unt has gone before the County School Commissioners obtained a license.

The people should be educated to an appreciatio the services of a competent dentist, and to understand value of the teeth. The State Society should educate, only the dentist, but also the people.

Committees should be appointed not only to re addresses on dental education, and the theory and pra of dentistry for publication in the dental journals, but should also have addresses to the public published in papers of the day. This would not only benefit the pe but it would also redound to the interests of the profes

Dr. Patterson—While we rejoiced that the han death had spared all the active members of the so during the fifteen months which have elapsed since th annual meeting it had yet removed a much esteemed fr co-worker, and corresponding member, Dr. J R. Wa of New Orleans: a dentist of the highest attainment gentleman of most amiable character; those who knew best loved him most. Dr. Patterson concluded with th for the honor conferred in placing him in the positio honor and trust he occupies, asking for the co-operatio all in making the meeting a successful one.

Dr. Sid. Holland—Spoke at some length on the great advances made in the science of *Chemistry*, and the value and importance of this branch of study to the dentist, though he could never hope to master it as it required the work of a lifetime: but he should master the elements of the science, especially in acquiring the new technology—when all use the same language each can understand the other.

Dr. W. F. Tignor—Spoke of the importance of a more thorough knowledge of *Therapeutics*, in enabling us to repair the ravages of disease and restore to usefulness the valuable organs under our charge. Too many remedial agents are used empirically—because they are recommended by some one else who has found them valuable. We should understand their therapeutic value, what they will accomplish, and in what way they act; we should be able to use our remedies scientifically and not blindly.

A paper from Prof. J. H. Coyle, Baltimore College of Dental Surgery, on the subject of *Dental Education* was read. Professor Coyle said that great improvements had been made in the line of college education; students were not turned out without at least a technical compliance with the rules of the Association of College Faculties. But the goal has not yet been reached; we have not yet attained a perfect system. Colleges are striving bravely to come up to the standard, and yet how many graduates are competent to take charge of a practice?

They cannot grasp and appropriate the pabulum offered them; they cannot execute with the hand that of which they have learned only the theory. College education is largely a course of memory-stuffing, looking only to the final examination and the coveted diploma. All the wisdom of Hippocrates will not make him a dentist unless he has a skilled hand; he must have the mechanical skill for a basis, and *time* is needed to cultivate and develop this.

To this end Prof. Coyle recommends that a two years' preliminary pupilage, under a competent preceptor, be

made the basis of matriculation, hoping that the soc
would instruct her delegates to the National Board of
aminers to bring this matter up.

Dr. H. S. Colding—Said that he could not agree
Dr. Coyle. He had no preliminary pupilage but he
mained through the summer sessions, and had all the w
he could do in the infirmary, under competent instruct
far more so than if he had been in the office of a busy p
titioner. A student who matriculates as late as possibl
the session, and who leaves immediately after the exam
tions may need a precepter, but not otherwise.

Dr. Holland—Said we have but two ways of lear
—what we find out onrselves, and what some one else
us. The diploma only means "You are now fit to st
without help." The old authors found out all they k
by practice or experiment. It makes no difference ho
man learns a thing provided that he really knows it.
cording to the standards of to-day, it is better for a ma
have a diploma, but he can be a successful dentist wit
it if he is determined and ambitious.

Dr. S. A. White—Said that if the ideas of the p
were carried out, it would exclude many of our best
dents from the colleges. A student is invariably pl
first in the laboratory of his preceptor, and if the man
a large mechanical practice he will now get out of the
oratory, and will never see a tooth either extracted or fi
A first-class dentist with a large practice cannot person
instruct students; his practice will not permit it. T
years at college with full terms will give much better
paration.

Dr. S. *B. Barfield*—Said that he had been on the
amining Board of the State of Georgia for seven years,
he was highly gratified at the advances made in the colle
Graduates now stand fully 33⅓ per cent. higher in t
examinations than they did five years ago.

Dr. Carpenter—Said that the high standard of de
education to-day was due to the demands of State Socie
through their Examining Boards.

Dr. Cook, Texas, Said that things were very much changed from his early days, when his preceptor paid $200 for the recipe for a "dental tincture." to kill the nerve of a tooth, and $300 for three weeks instruction from a traveling dentist from New Orleans.

Dr. Main, Dalton, a practitioner of medicine, being called upon, admitted the general indifference of medical men to diseases of the oral cavity; that dentists were striking the right line in tracing many lung and throat troubles to diseases of the mouth and teeth; he was satisfied that dentists could render great assistance to physicians.

Drs. Carpenter, Holland, Chapple, Thornton, Palmer, White, and others cited a large number of cases where physicians had diagnosed as cancer, osteo-sarcoma, mumps, etc., local trouble arising from uncerated roots, impacted wisdom teeth, etc., which after having been vainly treated for weeks and months by the physician, yielded readily after correct diagnosis by the dentist.

Dr. D, D. Atkinson, Brunswick, read a paper on The Dental Pulp, which he described as a most highly organized structure, the terminal point of arterial circulation, the dispenser of nutriment, the concentrator of all acute sensation, the seat of an intensity of pain that human endurance cannot stand, and for the relief of which dentistry is an absolute necessity.

In the discussion of this paper Dr. Crawford, Nashville, Tennessee, said that we do not fully understand the dental pulp. It is not, stated in the paper, the extremity of circulation nor a periphery of nerves; it is a ganglion, a bundle of nerves; it was not designed to be injured nor intended to transmit pain; it has no tactile power, no sense of heat or cold; it is capable only of transmitting a sense of injury to the brain. If exposed it is in violation of nature's laws. The dental nerve excites only reflex pain—it is nervous reflex action more than any thing else, like that of the iris to which it is wonderfully near of kin, but we do not understand its pathological conditions as thoroughly as does the oculist. Common traumatism, or septic ditions may be relieved and the nerve restored to pe health. We can diagnose a pulp-stone, but we cannot it. The oculist can do more than that with the iris. a fortunate thing for Humanity that the life of the nerv not of vital importance for the preservation of the to but that pulpless teeth when properly filled may do g service for many years.

Dr. W. H. Weaver—From notes gave the history number of interesting cases of replantation.

Dr. H. S. Colding—Had no faith in replantation. a tooth was too frail to fill in the mouth, it was too fra extract successfully. He would in all cases crown Logan or other crown. He had been very successfu the treatment of dead teeth, treating with iodoform wood creosote paste, changing it every other day, se with Gilbert's patent filling material.

Dr. F. L. Adair—Described a very interesting cas which he asked the advice of older practitioners. The tient is a boy of eleven years of age, who from the ag one month up to nine years old had been an invalid, convulsions, etc. Did not erupt any teeth until afte was three years old. He now has all of the perma teeth due at his age, but they are very extensively deca with nerve exposures, and so soft as to be indented the finger nail. Two of the first permanent molars been extracted, the other two are decayed below the ma of the gums. The two superior canines are only parti grown, but are already badly decayed. The bicus alone might possibly be saved. Shall they all be extra at that early age? They cannot be filled, they canno crowned, they are all badly diseased.

Dr. W. H. Morgan, Nashville, Tennessee, said it evidently an extreme case of faulty development. teeth had evidently never been fully organized. All th that cannot be saved should be removed. It is not g practice to preserve devitalized molars at that age.

promotion of the general health and development of the body might improve the teeth somewhat, but all the teeth of soft structure, with pulp exposed, should be removed, or grave results might ensue. Tooth structure at that age contains so much animal matter that putrefaction ensues, with abscess and septic poisoning. The bicuspids and molars may be lost early yet leave no permanent gap in the arch. If taken out at the age of twelve or fourteen the space will fill up and at twenty-five the loss will not be felt.

Dr. Tignor—Asked what he would do with little baby teeth when early decayed?

Dr. Morgan—Take them out.

Dr. Adair—Asked how if the decay before the roots have begun to absorb?

Dr. Morgan—Take them out.

Dr. S. A. White—Said that with all due respect to Dr. Morgan he could not sit still and hear such indiscriminate extraction recommended. He thought we should make every possible effort to preserve the deciduous teeth, until the natural time for their loss.

Dr. Morgan—Said that after the death of the pulp there would be no physiological absorption of the root and nature would never get rid of them. A devitalized deciduous tooth cannot remain in the mouth a month without producing disease and danger to the permanent teeth, either destroying the germ or causing imperfections of the enamel, through the pathological condition of the surrounding membranes.

Dr. White—Did not believe the permanent teeth were universally affected by decayed deciduous teeth. We often see devitalized temporary teeth, with the crowns all broken off, followed by perfect permanent teeth.

Dr. Morgan—Said that in every case of disease we should remove the cause of disease.

Dr. J. Y. Crawford, Nashville, Tenn., said there was no question of greater importance than this, and it grieved him to hear this indiscriminate extractio r ciduc teeth recommended. There was no matter of greater i portance than the retention of the deciduous teeth, from t canines to the molars. It is true there is no absorpti after devitalization. The extraordinary physiological fu tions are always the most susceptible. An organ wh has but one work to perform—a specific work—is the m susceptible. A large cavity, even without nerve exposu may interfere with and retard absorption. But we have means to supplement that physiological function. He sa I believe in my heart if the dental profession was not ca ble of managing and controlling such cases, I would res and quit. We supplement that function how? by keep them isolated and non-antagonizing; they will then ex iate, permanent dentition may be retarded, but not interfe with. Permanent dentition is often too precocious, a there is no harm done in retarding it. If the germs of permanent teeth are in contact with putrefaction the res will be bad, but keep them free from that, and the tooth be perfectly organized. It is not even necessary tha should ever see the light for perfect development, as is s in teeth developed in transverse position. If the tootl diseased I treat it; if it is devitalized I treat it; there is condition we cannot treat; establish drainage till restorat is brought about; treat then as we do the permanent tee keep them isolated and non-antagonizing. I have retair them thus for three years, and had the new teeth from low in good condition.

Dr. Catching—Wished to enter a protest against t views of Dr. Morgan, as not being the views of the Geor State Dental Society, and to endorse the position of Crawford.

Dr. Morgan—Said that he did not intend to say extract all deciduous teeth, when they were doing no har and giving no trouble; they may be tolerated if there is decided disease.

Dr. Catching—Said he would also disagree with I

Morgan in regard to systemic treatment and supplying bone material. He would give abundance of sweet milk and lime, and food especially selected for bone material.

Dr. Morgan—Asked what food could possibly be selected that did not have ample bone constituents? Even the poorest flour contains 2¼ per cent. which, at the rate of half pound per day would give 2¼ pounds in a year, nearly the weight of the entire osseous system of a child of that weight, Professor Huxley putting the weight of the dried human skeleton at 6 to 8 pounds.

Dr. Catching—Said the system would probably not appropriate the whole amount furnished.

Dr. Morgan—Did not think it would assimilate inorganic matter until it had passed through animal life.

Dr. Catching—Asked him about iron in concentrated form as administered by physicians?

Dr. Morgan—Said that it was not assimilated by the human system but remained mineral iron still.

Dr. Catching—Thought it made little difference what shape it was in so that it accomplished the work for which it was administered. He did not believe in the chemical-laboratory-of-the-animal system to convert it into pabulum.

The subject was passed and Dr. H. H. Johnson, of Hawkinsville, read a paper on "Devitalized Teeth."

He said that the difficulties surrounding the treatment of devitalized teeth, tax the skill, the ability, and the utmost resources of the dental practitioner; it is a subject that often looms up as a stumbling block in our path. In his treatment, when he devitalizes a tooth, he waits a week after making the application, giving time for the dead tissue to slough, which it will do at the apex if time enough is given. Then adjusting the rubber dam he cuts freely through the crown surface, to gain access. A fine Donaldson nerve cleaner is then pushed cautiously into the canals and given half-dozen turns when the nerve will be caught by the barbs and can be brought out entire in the majority of cases. After cleaning as thoroughly as possible with this, he enlarges the orifice with a large sized Gates Glidden dril the engine, going about one-third of the way down. does not claim that it will follow a curved canal, but it come as near to it as anything can, and if cautiously h dled there is very little danger of breaking. It should frequently withdrawn and cleaned, to prevent clogging it may get fastened in the canal and twisted off. Wit smaller size he enlarges nearly to the apex, if straight. it turns hard he "suspicions" a curve and goes no furt After the upper third has been enlarged the remaining bris is readily cleansed away. He gives several reas for enlarging the canal: 1st, the canal cannot be fille too small for the passage of a broach. 2nd, it cuts ou dentine of which the tubuli may be infiltrated, with put cent water, and 3rd, it makes the canal round and easie fill. After cleaning he dries with warm air, and pumps of eugenol or eugenic acid, using this exclusively.

If there is no fistulous opening he makes one, rarely treats an abscess; nature will attend to that if cause is removed.

If the tooth has been devitalized for some time, decomposition has set in with incipient pericementitis is more cautious. He cleans thoroughly at the first sitt and fills the roots with cotton saturated with eugenol, s ping the crown cavity to exclude the moisture, giving structions to call at once if any soreness follows. If i all right at the end of a week or ten days he dries warm air and fills; never allows water or saliva to e the canal after the first cleaning unless the apical fora is unusually large and moisture has entered there. Mi bes and spores do not thrive in a dry locality. In the la case the cotton in the root is frequently changed, fresh medicine to prevent mephitic gases. In this clas teeth the pumping motion must be avoided or mois will be drawn in. If there is an opening for drain immediate filling is permissible. He fills the canal oxy-chloride, which is disinfectant, and has a drying e on the dentine.

He uses eugenol exclusively in the treatment of roots because it has no escharotic qualities, does not coagulate albumen, creates no irritation if pumped through, has an odor of cloves which is not objectionable, it penetrates the tubuli and checks putrefactive changes; it has all the good qualities of carbolic acid and none of the bad.

In the discussion of this paper Dr. Catching said he did not find it so extremely easy to remove the root contents entire, as Dr. Johnson seemed to. He had tried the Gates Glidden drill once, as he thought very cautiously, but the first thing he knew he went out through the side of the root into the gum and brought blood; he prefers to leave the canals as he finds them. He had been filling root canals with chlor-percha, as he supposed successfully, until on one occasion recently, wishing to remove a portion for a permanent filling he pulled out the whole thing, from both roots and the pulp chamber, and each root lacked one-half of being filled to the apex.

Dr. H. S. Colding—Applies arsenic for twenty-four hours, followed by wood creosote for twenty-four hours; this mummifies the pulp and it comes out entire. He had used two Gates Glidden drills and broke them both off in the tooth, having to rust them out with salt. On one occasion his filling went through the apex and caused trouble, but the use of aconite, iodine and chloroform, and Darby's plaster cured it.

Dr. Morgan.—Characterized Dr. Johnson's paper as a most admirable one, which has rarely been equalled for clearness and conciseness. He also commended his method and treatment. He considers the Gates Glidden drill a snare and a fraud—they will pop off and play the old nick. So also the Morey drill to a certain extent. He recommends caution in the use of warm air, too much drying will impair the bond of union between dentine and enamel; the dentine will draw away from the arched cups of the enamel and the latter will break away peeling off like the bark from a tree.

All antiseptics coagulate, some more than others. is to this property that bichloride of mercury owes efficiency.

Dr. S. A. White—Thinks that as a rule we treat much. No one agent will answer in every case. He bichloride of mercury and listerine most frequently. Ag with Dr. Morgan as to the Gates Glidden drill; broke once off and had to extract the tooth; no matter how tiously used they will pop off.

Dr. Johnson—Said he had used the same two ex sively for a long time. He takes a size larger than canal, turns cautiously and cleans frequently.

Dr. W. S. Smith—Broke one off and had to ext the tooth. He used salt and iodine and worked at i weeks, then concluded to risk filling with the steel in, it soon gave trouble and he had to extract the tooth. uses a Donaldson nerve broach and cleans as thorou as possible, using peroxide of hydrogen followed by bic ride of mercury, then iodoform and eucalyptus, stoppi up for a day or two. If it gives no trouble he fills in a days. He fills the roots with oxy chloride mixed very and pumped up with bibulous paper on a broach.

Dr. Tignor—Said he had used oxy-chloride for last time unless he could find something to keep it going through. It was apt to stir up a little volcano.

Dr. Holland—Pumps it up with a soft gold wire leaves the wire in to close the foramen. He flattens wire and bevels it at the end. He never reams out canal.

Dr. R. W. Thornton—Never drills out the cana only complicates the matter, you are too liable to crooks and curves, and to go through. He pumps carb acid through the fistulous opening, using floss silk a soft broach. If the canal is too small to admit a broa does not need filling.

Dr. White—Thinks Dr. Tignor's trouble due to forced through the foramen. He uses a hickory poi lose the foramen, and considers long staple cotton better an floss silk.

Dr. Crawford recommended sterilized orangewood for oot filling. He considered the paper of Dr. Johnson one f the best he had ever heard and was much pleased with e discussion. The original object in saving pulpless eeth was merely to prevent a gap. Now that they are so rgely utilized as supports for bridgework their importance s greatly enhanced. There are three classes of cases, three onditions of dead teeth—a simple devitalized tooth, without omplication; a blind abscess, or incomplete fistula, and a omplete fistula. In the first case every teaching of minor urgery inculcates immediate filling. There are three conitions which may give trouble; 1st, an imperfectly filled anal, leaving a reservoir for the accumulation of offensive atter; 2nd, the passage of offensive matter beyond the pex—either a broken instrument or filling material; and rd, the pumping through of decomposing septic matters. he potency of virus is best illustrated in the process of accination, when a particle invisible to the naked eye, ntroduced through a tiny scratch from the point of a camric needle, may permeate the entire system. The material sed for filling is immaterial so that you get it where you ant it. The first thing is to close the apical foramen; get t down to a fine point and yet not pass through. If it is orked up at that end it may be left open at the other end nd washed and treated as much as you please, so that the alls of the canal are not softened. In the treatment of bscess we don't appreciate the importance of refrigeration; he reduction of temperature, either by ice or ether spray.

Dr. Morgan wished to say a few words on the importnce of opening the canals (especially in patients who have eached the meridian of life) when there will often be found eposits of osteo-dentine in the efforts of nature to protect he pulp. This must be cut through to reach the canal. The end of the root should be reached through the fistulous opening and smoothed off. It will often be found roughened by dissolved cementum.

On the subject of Prosthetic Dentistry Dr. Cam spoke at length in favor of vulcanite rubber.

Dr. E. F. Adair read a paper on Artificial Dentu

Dr. Crawford spoke with great animation on the ject, deploring the downward tendency of mechanical tistry through the introduction of cheap rubber worl the consequent reckless sacrifice of teeth which might been made to do good service for years. This unn sary extraction is the cause of shortening of life i United States, a potent factor preying upon our infl and making ours a profession of paupers. He sai thank God for the genius that suggested bridgewor an Allen who gave us continuous gum work.

Dr. Holland said he would not wipe out vul altogether. It was like the hickory shirt and jeans pa the working man. All cannot wear fine linen and b cloth, neither can all have gold or continuous gum

There are those who must have work that can be for a low price, and to them rubber plates are a boon.

Dr. Thornton said that the introduction has deg dentistry in that it had pulled down prices so that i degrading to a man of skill and scientific ability to wo the prices that now rule in prosthetic dentistry.

Dr. White said that in spite of all that could be against it, rubber had come to stay, the best thing we do with it was to persuade all our patients to have it lined. It is more healthful to the mouth, and comma better price.

Dr. Holland spoke of the injurious effects of br work upon the adjoining teeth.

Dr. Crawford thought movable plates much harmful to the adjoining teeth than bridgework.

Dr. Morgan said that if impressions were left in a of water for ten minutes (after being varnished) the would have a smooth hard surface such as could n produced by any other method.

By request, Dr. J. Y. Crawford spoke of the inflù of erupting wisdom teeth in producing diseases of the espiratory tract.

He said that the results of close observation in this direction were very striking. Tonsilitis, inflammation of the mucous membrane lining the throat, even phthisis pulmonalis could all be traced to difficult eruption of the wisdom teeth. He said that he was an advocate for the preservation of all the teeth—non-breaking of the dental arch, except in the case of hereditary irregularity, but if any teeth must be sacrificed they should be the wisdom teeth of the upper jaw, making the lower ones non-antagonizing.

In many common local throat affections, the primary esion is of a traumatic nature, from the closing of an upper cusp on the lower jaw causing a pinching and hardening of that structure. From that indurated tract a line of inflammation passes back to the tonsils, glandular masses whose secretions are designed to lubricate the respiratory tract. From inflammation they fail to perform that function, and the throat is chafed and ulcerates, and permanent disability, a chronic affection ensues.

Pathological tissue cannot be absorbed. It is changed from normal to hyperplastic and is never gotten rid of.

We speak of first and second dentition, but there is no such thing; it is one complete operation from embryonic to adult life, and the same conditions though in less degree may ensue from the eruption of the sixth year and the twelfth year molars, a tendency to hypertrophy. Barring out hereditary tendency to phthisis pulmonalis, a large per cent. of lung troubles are due to the difficult eruption of the wisdom teeth; the primary lesion is around the lower tooth, or where the upper tooth strikes the lower jaw, spreading thence to the tonsils, throat, and air passages. This is a subject to which our young men would do well to devote special attention. This little thing remedied may enable a patient to avoid premature decline. There is nothing like oral and dental surgery; it leads the world. If carried fully up to all it is capable of, we may yet become the teachers of the world in pathology.

Dr. L. D. Carpenter thinks that fully ninety per of all cases of catarrh and other nasal affections, affec of the eye and ear, of the throat and lungs, and even palsy and rheumatism are due to diseases of the mouth teeth.

Dr. Morgan said that every departure from a phys gical condition of an organ or structure impairs mo less the efficiency of the function it is designed to perf

Aberrations from the normal condition of the mu membrane of the posterior portions of the oral cavit much more frequently due to the eruption of the first second molars than has been supposed. Diseased s tions pass over the delicate membranes of the larynx pharynx which are readily affected by these abnormal fl Every departure from health in the oral cavity affects t organs. We have healthy pus first, but through conti inflammation it is changed and becomes offensive, exc ing the throat and causing serious trouble. This shou closely watched and cared for. The medical world last waking up to the importance of diseases of the m and teeth. A distinguished medical man recently said "If the race becomes edentulous as is prophesied, it wipe out all the business of the dentist and half of th the physician."

Dr. Gordon, a physician of Dalton, was called u He said that he was glad to express his high apprecia of dental surgery, but he was somewhat startled at lea the immense domain claimed by them. He recognized a broken tooth might cause an affection resembling ca which would be cured by extracting the tooth. A neur eye or ear-ache may be cured by extracting a diseased to but he was not prepared to yield to them the sple domain of otology and ophthalmology. It is true tha cannot have perfect health without perfect digestion, perfect digestion without perfect mastication, nor pe mastication without perfect teeth, so that in the last anal the health of the people depends on the skill of the de ofession, and it looks as if they would occupy the whole ld, following the alimentary tract to its other extremity d treating even hæmorrhoids.

Dr. Gordon spoke of the indebtedness of the medical rld to the dental profession for that great discovery— æsthesia, the greatest boon ever conferred upon the man race, and yet, strange to say, by far the greater per nt. of accidents from its use occur in the practice of den- ry—so many cases of "death in the dental chair" are orted.

Dr. Morgan agreed that it was much safer in capital erations than in minor surgery. Excitement and suffer- severe pain being an antidote to all anæsthetics. All esthetics occasionally produce death. There have been cases of death from cocaine reported in the last few days. thinks anæsthetics not safe for dental operations.

The hour for the election of officers having arrived the ction was held with the following result: Dr. S. A. ite, President; Dr. W. Y. Tignor, First Vice-President; J. A. Thornton, Second Vice-President; Dr. L. D. penter, Cor. Secretary; Dr. H. H. Johnson, Rec. Sec- ry; Dr. H. A. Lowrance, Treasurer.

Tybee was selected as the next place of meeting, the ular time being the second Tuesday in May, 1889.— *orted for Dental Register.*

ARTICLE II.

E RELATION OF SOCIAL LIFE TO SURGICAL DISEASE.

PRESIDENT'S ADDRESS.

DELIVERED BY D. HAYES AGNEW, M. D.

sident of the American Surgical Association, September 18th, 1888.]

Fellows of the American Surgical Association:—As the erations fare on, enriched by the results of scientific labor, which pours its tides of opulence into all depar of human thought and industry, there follow, throug active or reflex influence, certain notable changes, nc on the life and manners of a people but on their pl and mental diseases. The more advanced a civilizati more complex become the problems which surrou While the accumulation of wealth and the multiplica appliances for human comfort have, in the aggregat tributed to the well being of the race, yet there is rea fear that the insatiate and ambitious demands of the n ful leaders in the work of the world, unless condition environed by reasonable safeguards, may acquire triumphs at the expense of human life. It is a sug and a solemn thought, that in the victorious march o ization, thousands of victims must perish benea chariot wheels. There really seems to be a pe antagonism between man's inventions and discoveri the well being of a no inconsiderable fraction of hun He reduces the elastic vapor of water to practical u is rewarded by seeing countless numbers of human blown into shapeless masses by his rebellious servan chemistry creates formidable explosives capable of di ing the solid strata of the earth, and these, in wicked become instruments for consummating such diabolica as serve to unsettle the peace of a nation. He rear ufactories for fashioning multitudinous fabrics which ter.to the comfort and luxury of the race; and yet wh hands of the fabricator are busy manipulating the ma of these industries, he is breathing a death-laden air send our missionaries to China and the Sandwich I to reclaim their peoples from the barbarities of heath and then our commerce to ruin their souls and wrec bodies. There seems, indeed, to be an eternal c between good and evil.

Considerations like these naturally lead to a inviting field of study, namely, the relation betwee material prosperity of a people and the forms of the ase. What I propose, however, in discharging one of the luties belonging to the honorable office to which, by your ind suffrages I have been elected, is very briefly to follow ne line of this inquiry, that is—

THE RELATION OF SOCIAL LIFE TO SURGICAL DISEASE.

There is no tyranny more exacting or despotic than hat exercised by the conventionalities which govern our ving. All stages of life from infancy to old age are under s domination. It dictates the education, the manners, the alk, the dress, the forms of speech, in fine, the whole being. eyond all contradiction the behests of fashion are vastly ore influential in governing public conduct, than any rguments drawn from the teachings of structure and function. As a rule, when the conflict is between taste and eason, the victory will be on the side of taste. In nothing this more favorably displayed than in the apparel used to rotect the body.

It is not an agreeable task to peer into the wardrobes r dressing rooms of our fair countrywomen. I have no pecial taste for exploring museums of bizarre collections; ndeed, without a key to interpret the curious and ingenious echanisms for clothing the form divine, such an exploraon would be like an archaeologist attempting Egyptology gnorant of cuneiform inscriptions. I have, however, some nowledge of human anatomy in its broadest sense, and hen I look upon the masterpieces of the human form, hether in marble or on canvas, a Belvidere Apollo or a enus de Medici, and contrast these with the dressed out pecimens of modern women, I am forced to admiration; ot so much at the amazing ingenuity displayed in concealng the divinely appointed form, as at the plasticity and atient submission of mortal clay under the despotism of a onventional inquisition. Were these processes of mutilaon and abnormality harmless, did the body consist of a ere mass of protoplasm, capable, under the application o ertain stimuli, of assuming, normally, protean shapes, the

subject might be passed over with the feelings of a nat
ist; but this is not so. These violations of the law
structure bring with them serious penal inflictions, w
did they terminate with the original offender, might be
missed with a sentiment of pity; but projecting, as the
their baneful consequences to successors, they bec
proper subjects for criticism.

Let me name a few examples as illustrative of
subject. For some time the profession has been specul
on the causation of nasal and post-nasal catarrh, wit
accompanying auditory defects, the growing frequen
which cannot have escaped general observation. Dou
no single agency will explain the presence among
this unpleasant disease, yet there are facts connected
this affection which to me are very suggestive. I ca
recall an instance in which I have met with the di
among females belonging to the Society of Friends, D
ards or Mennonites. If this, on more extended observa
proves to be true, may not the head-dress peculiar to
people be accepted in explanation of their exemption.
bonnet, which at one time overshadowed the entire
as all know, has been gradually shrinking in its dimens
until it has become a mere shadow of its former self,
offers no protection whatever to the head. As a subst
I would not insist upon the quaint head gear of the Fr
though I believe that any modification which will pr
this part of the body will lessen the tendency to cata
inflammation of the naso-pharyngeal mucous membra

MUSCULAR RESTRAINT.

A legion of physical imperfections arise from mus
restraint. Among these may be mentioned weak an
narrow or contracted chests, round shoulders, proje
scapulæ and lateral curvatures of the spine. The fo
concession to appearance and unwise partiality of pa
for enforced systems of education, the demands of w
bear no just proportion to the capacity of the infantile

constitute the initial or determining force of these physical imperfections. In many cases the weak ankles of children, characterized by eversion of the feet, thus allowing the superincumbent weight of the body to be transmitted to the latter inside of the proper centre of support, is largely chargeable to the miserable practice of placing on the little ones, long before they are able to walk, boots tightly laced up the limb some distance above the ankles. The confinement of the flexor and extensor muscles by this conscriction prevents that free play of movement which reacts so favorably on all the elements of an articulation, and that, too, at a time when the growing forces are at full tide, so that when the time arrives for standing and walking, the muscles are unequal to the firm support of the joint. The consequence of this feebleness is soon seen in the turning outward of the feet, throwing the strain on the internal lateral ligaments, which in turn become elongated through growth, and thus the defect becomes established; but the evil does not terminate here. The calcaneo-cuboid and the astragalo-scaphoid ligaments, losing the proper support of the tendon of the posterior tibial muscle, under the abnormal tension begin to yield, and to the deformity of eversion is added that of "flat-foot." That the above is not a mere hypothetical explanation of the ankle defects, I have many times verified by finding the threatening symptoms disappear after liberating the imprisoned muscles and subjecting the enfeebled parts to a judicious massage. Under no circumstances, as is too often the case, should instrumental apparatus be applied, unless in cases where, from neglect, the deformity is thoroughly established and is progressive.

Take another deformity, that of bow-leg. On the earliest signs of the unsightly curve, the limb is too often trammeled with irons, and the growth of the muscles arrested, when it is well known that if manual force be systematically applied two or three times a day, the limbs will gradually assume their typical form.

Again, in further illustration of our general text take as an example a child who, for one long or two short sions, for six days of the week, sits over the study d compelled to assume a position in which, from the inc tion of the body, the shoulders fall forward, the head b supported most probably on the elbows and hands. such a posture the great serrati and pectoralis major minor muscles are in a state of relaxation, while the ere spinæ and trapezei muscles are in a state of tension. change in the position of the shoulders gives the sca over, without antagonism or resistance, to the action o rhomboidei and the levatores angulæ scapulæ mus which, acting conjointly, cause that projection of the l angles of the shoulder blades which the older anato termed "scapulæ alatæ." To all this must be adde very important factor of four to six hours in the sc room and two hours, at least, of home preparation fo following day's recitations, during which time the res tory functions having been reduced to a minimum of a ity, the muscles of the chest are comparatively passive areation of the blood tardy. Certainly no combinati conditions could be better devised for forming contr chests and round shoulders. It is not long before watchful eye of the mother detects the change in the fi of her child. She will probably discover this and alarm, even when the pale face, the languid air and capricious appetite of the child cause no anxiety; and comes the second act in the drama of physical deteriora namely, a resort to shoulder braces and stays, in ord accomplish that which the muscles should be taught t without restraint or incumbrance.

LATERAL CURVATURES.

While it is true that lateral curvatures of the spine pend upon causes both central and peripheral, yet in small number the deformity is clearly attributable to i ences of a social nature. The young column, by reaso the non-union of the epiphysis and diaphyses and the ple character of its ligaments, is extremely flexible. Whatever, therefore, destroys the muscular equipose, however inconsiderable the force, if persistently repeated, changes the centre of gravity and develops primary and compensating curves. For six months, or over, in the year, any fine morning, groups of children may be seen plodding along our streets with a miniature library of books suspended from one shoulder. To the already preponderating scale of the balance, add this additional factor, a probably badly arranged light, compelling these little *savants* to assume a lateral inclination of the body in order to obtain he necessary illumination of the subject of the study, and you have all of the conditions necessary for perpetuating he lateral deformity. "Just as the twig is bent the tree's nclined." As in the case of round shoulders, so here, in order to prop up the falling column, instrumental contrivances are immediately called into requisition. The body s encased in a formidable coat of mail, to be followed by muscular atrophy and permanent distortion of one of the otherwise most beautiful pieces of mechanism in the human rame. It is true that in most educational institutions for he young provisions are made for physical culture, and hese are in some measure antidotal to the evils complained of but, in my judgement, do not at all compensate or that free, unstudied romp in the open air, untrammeled by the hard and fast rules of calisthenics, so fascinating to he young child. Nor does the evil end here. While the orcing process which is to stimulate the mental powers far beyond the real capacity of the immature and growing brain to receive is in progress, another is inaugurated, which is to qualify especially the female child to acquit herself with distinction when the time arrives for entering he great world of society, or as Thomas Brown would tyle it, "for the frivolous work of polished idleness." The gait and carriage must be reduced to prescribed rules, he voice toned down to a drawl or trained to move like a mountain torrent. The muscular apparatus of the face

must be taught to express, not the spontaneous and na
outflow of feeling which wells up unbidden from the n
chamber of the heart, but rather to produce an effect;
so this work of transformation goes on until it culmi
in the full-blown society girl. Is it any wonder that, u
such a scheme of education, conducted throughout
studied disregard of both the physical and mental con
tion, and exercising as it does such tremendous dra
the nervous system, the world is becoming filled w
class of flat-breasted, spindle-limbed young women, un
for the varied and responsible functions of womanh
qualifications, too, which under a different regimen an
rected into proper channels would exert a most pot
influence on all the great social and moral problems
age.

While thus plain spoken on the frivolous metho
living, I do not wish to be understood as being unfri
to the highest cultivation of the mental and ph
powers, if conducted on lines in harmony with the o
ization, nor to any technique which may conduce to
sonal grace or elegance of manners, so that the man
womanly personality of the individual be not sacrific
the Moloch of sentiment and sham. Indeed, indiffe
to these things is inexcusable, in either man or woma
not only lessening their influence in the world, b
many respects disqualifying them for the highest disc
of the duties of modern life. Valuable as may be th
polished diamond, yet it is only after the wheel of th
idary has worn away the dull incrustations that its
brilliancy is revealed and the gem is fitted to ador
breast of beauty.

BODILY CONSTRICTION.

In the further discussion of my subject, I may
notice the evils of visceral displacement and pressure,
sequent on abdominal constriction. Whatever ma
said in regard to Greek and Roman life, the infinite

which these people displayed in developing and maintaining the very best type of the human form, is worthy of admiration. The Ionic "cheton," spoken of by Attic writers, and so often represented in the bronzes of Herculaneum, while it would not exactly satisfy the modern idea of dress, was at least free from the charge of interfering with the contour of the human figure. The painters and sculptors of those classic days were reverent students of nature. Their delineations were true to life. Their works furnish us with no hour-glass contractions of the human body. The constriction of the waist operates injuriously on both the supra- and infra diaphragmatic organs. Any force acting on the base of the thorax and preventing the expansion of its walls concentrates the function of respiration, which should be general, on the apices of the lungs, and hence, under these circumstances, the movements of breathing are for the most part confined to the summit of the chest. As the initial seat of tuberculosis is located at the upper part of the lungs, may not the inordinate work entailed on these parts by constriction have some part in hastening such deposits in the female, where the predisposition exists? It is this forcing inward of the costal border of the thorax which causes the groove on the anterior surface of the liver, so familiar to anatomists, This pressure cannot fail to interfere with the descent of the diaphragm, and with the functions of the gall bladder and duodenum, and exercises no small degree of influence in favoring the formation of biliary calculi, females being peculiarly prone to such concretions. The extent to which the liver may be damaged by extreme constriction of the waist, is well illustrated by a case quite recently reported in the *British Medical Journal*, in which a considerable portion of the left lobe of the liver had been separated from the right, the two being connected only by a band of connective tissue, and which enabled the operator to remove the detached mass without difficulty. The evil effects of this constriction on the viscera of the abdomen and pelvis

is most strikingly witnessed in the embarrassed portal c
culation, in the different uterine displacements, elongati
of ligaments, displaced ovaries, tubal inflammatio
hemorrhoids, herniæ and other morbid conditions whi
either prevent or disqualify the woman for the exercise
those functions of maternity, and which in addition, throu
reflex influences, entail a host of functional disorders reac
ing into every avenue of the body and invading both t
mental and moral constitution of the victim. So proli
have these infirmities become that a new department
surgery has been organized for their special manageme
To what, if not to social causes, can these morbid chang
of structure in the pelvic organs, especially of the uter
and its appendages, be attributed? Why should lacerati
of the cervix uteri be so common an accident? Labor
a natural process and ought not, under ordinary circu
stances, be attended by lesion of uterine tissue. I c
conceive of no agency more likely to induce that muscul
degeneration which predisposes to this accident than t
modes and methods of modern living, especially amo
the inhabitants of great cities. In the expression "mo
ern living" much is embraced. It includes culinary pha
macy, over-feeding and drinking, insufficient or injudicio
exercise, improperly heated apartments and a disproporti
between the hours of exercise and rest. Contrast if yo
will the muscles of the hardy country housewife, wh
bearing the cares and responsibilities of a dependent famil
bustles about the livelong day in-doors and out-of-doo
eats with a relish her plain and simple fare, repairs
reasonable hours to bed and sleeps the sleep of the belove
undisturbed by dyspeptic nightmares, and rising with t
golden dawn, resumes the round of domestic toil with
clear head and supple limbs. I say contrast this type of
class with that of another, the woman born to luxury an
ease, whose capricious and exacting taste taxes the art
the professional caterer, who drags out the morning hou
toying with some crazy pieces of embroidery or trash

novel, lunches at one, rides out in the afternoon for an airing of two or three hours, returns to a dinner of five or six courses at seven, completes the evening at the opera, the theatre or the assembly, and coming home after midnight, crawls into bed weary and exhausted in body and mind, only to rise with the best hours of the morning gone, for another day of aimless routine life. Can it be doubted that in the first case, with a digestion unimpaired, with the products of textural change consumed by functional activity and eliminated through the proper emunctories, the woman should possess a vital resistance and a tone of tissue altogether superior to that of the other, whose habits of living must necessarily favor their faulty metamorphosis?

To these same agencies must be attributed that brood of nervous and hysterical evils for the relief of which the gynæcologist too often, I fear, invades the domain of womanhood, around which her whole sexual nature revolves, and which, save only in the direst extremity, should be sacred against all operative intrusion.

LATE MARRIAGES.

constitute another social evil, the penal inflictions of which involve both sexes alike. Pride and luxury determine long engagements or deferred proposals. Marriage, it is believed, necessarily involves an establishment, a display, a retinue of servitors. The good old notion of two souls being united in wedlock for the purpose of being mutual helpmates, and patiently together working up from modest beginnings to affluence, seems to be entirely at variance with the modern idea of this relation. In the meantime the young man is betrayed into unlawful sources of gratification, alike destructive to moral and physical purity, the pollution of which incontinence is often subsequently communicated and perpetuated to wife and offspring. I would not dare to say how many cases of this nature have been entrusted to my professional confidence, though I doubt not my experience does not differ from that of many of my professional brethren whom I address. It is under such circumstances many of those infective inflammations of the Fallo tubes, as salpingitis and pyosalpinx, arise, and which e the most serious deterioration of health.

THE FOOT AND THE SHOE.

It may be thought by some persons that the subje the foot and the shoe is not of sufficient dignity to ap in a public address. The Romans and the Greeks tho differently. The literature of both people is full of refere to the shoe worn by both sexes. So important, indeed the feet to the well-being of the body, that whatever im their usefulness, either for support or locomotion, bec a positive calamity. Nothing can be more unlike human foot than the modern shoe. Let any one leav impress of his or her foot in the wet sand of the sea-s and then place alongside of the imprint a fashionable s that the two were ever intended for each other w scarcely strike a child of the forests. The North Ame Indian entertains juster notions about clothing this po of his body than does the civilized citizen of New York Philadelphia. Compare the moccasin with the shoe o city belle. Compare the foot-gear of Pollux and of A phanes with the same, and we shall see that the savage the polished Greek alike understood the value of s feet in the race of life. It is the imperfect adaptation o shoe to the foot which constitutes the fruitful source o tired ankles, corns, bunions, over-lapping of the toes ingrowing nails. Some idea may be formed of the m tude of the evil from the fact that of eight hundred pat under the care of a prominent chiropodist of Philadel the great majority of the defects were entirely attribu to the high heels, and the contracted toes of the s Especially do these physical encumbrances arising fr blind submission to social laws operate disadvantage to our fair women at the beginning of the new dispensa requiring both muscles and brains, and when her fr propose to sweep away all the old traditions, and claim for her the earth with all its masculine employments.

GAMES AND AMUSEMENTS,

which in themselves are proper and praiseworthy, too often become developed into a craze, working both moral and physical mischief. Professor Leuf, himself a professional in the national game of baseball, has described the pitcher's arm, a condition of over-taxed function, and one in which all the anatomical elements of the upper arm are involved. There is also the tennis arm and the swollen, super-sensitive prostate of the bicyclist, both due to the abuse of popular amusements.

Defects of refraction or visual defects constitute another class of affections fairly attributable, in many instances, to social influences. The number of children which may be seen on our streets any day wearing glasses, has become a matter of common observation. It is far from being probable, that the most exquisite piece of mechanism, the human eye, came from the Divine Artificer imperfect. Because eyes are young, it does not follow that they are thereby better fitted to sustain prolonged use. Just the reverse is true, and it is high time that parents and educators begin to recognize the fact. The power of the eyes for continued use, like that of other organs of the body, is one of gradation. It moves in the general procession and strengthens with the advance in life, until development has attained to its zenith. Not only so, but the eye being a part of the body, it must suffer or rejoice through the operation of general causes. A bone may have its normal curves changed, a tendon may slip from its appointed groove, or a blood vessel be destroyed, and yet very little disability be realized ; but the eye is made up of such extremely delicate structures, and so acts according to fixed physical laws, that not the slightest alteration of a curve, or the mobility or density of its media, can occur without great vitiation of function. To exact, therefore, long hours of study from children of a tender age, involves a degree of functio strain altogether disproportionate to the structural resour of the organ, and by disturbing the orderly processes nutrition gives rise to hypermetropia, asthenopia, astigm tism, and its companion headache. That the picture is too highly colored or the causation overstrained, we ha only to contrast the children born and reared in those p tions of the country not too much dominated by the me ods of modern civilization, and who rarely demand a res to artificial aids to provide for abnormalities of vision. T only remedy for the evil when infantile scholarship is sisted upon is the Kindergarten or object lesson syste the most natural and effective plan of impressing the you mind.

RENAL DISEASE.

Is there any reasonable explanation drawn fr sources of a social nature for the great frequency of th renal disorders which come more particularly under t care of the surgeon, as crystalline deposits and calcu For maintaining the general health at the highest phisy ogical standard, a proper quality of food and the pro disposal of tissue waste are essential conditions. Alo with wealth and luxury come the abuses of the tab Americans are fast becoming a nation of dyspeptics. O country is so rich in the products of every zone, that n where else in the world can you find such a variety of foo animal and vegetable. These foods manipulated in thousand ways by the subtle art of the professional coo almost necessarily betrays one into excess, and also creat the desire for wines and other alcoholic beverages to a the stomach in disposing of its plethoric supply. In gre cities, which furnish relatively the largest number of cas of renal disease, affecting pre-eminently the mercantile a sedentary classes, we find just the conditions favorable their development. The competitions of trade keep th merchant always at white heat. Time is golden, and th street car and other means of conveyance annihilate dis tance, and the ride is substituted for the needful walk. A hasty lunch at the most convenient restaurant satisfies the inner man, until the business of the day is closed, when, weary and worn, he is driven to his home to partake of a course dinner, the balance of the evening to be spent on the lounge with the evening paper or the latest periodical. To the literary man the fascinations of the study and the library charm him away, with their siren voices, from the fields and the highways, until bodily exercise grows distasteful and repugnant. In the meantime there has been no provision made for the waste or tissue metamorphoses of the body through that great agency exercise. These accumulate in the blood, the internal eliminating organs, of which the kidneys are chief, are overtaxed, and then follow the evils of mal-assimilation, and of excretion, in the form of urates and oxalates, often resulting in the formation of calculi.

In conclusion, may we ever hope for a time when the race will realize that these bodies which we wear, which God has so highly honored by his own incarnation, are sacred temples, to be kept in harmony with recognized physical laws, and not to be made instruments of mere animal gratification ?—*The Polyclinic.*

ARTICLE III.

THE IMPLANTATION OF TEETH IN ARTIFICIAL SOCKETS.

DR. G. W. WELD, NEW YORK.

It seems to me that all the advocates and enthusiasts of the implantation of teeth can hope for in the way of success is to be compared only with the success which, in the past has been associated with replanting and transplanting.

The experience of a number of our professional brethr who have experimented in this direction under favorab conditions has, in the large majority of cases, result only in failure.

Of course it may be argued that the operation altogether new, and that transplanting is no criterion b which the success, or non-success, of *implanting* can b judged. To some extent this may be so. It has been sa for M. Pasteur in his novel cure for hydrophobia that r one, without experience, could rightfully gainsay his pro ositions, till time had demonstrated either their truth falsity. So far as this argument goes, both M. Pasteur ar Dr. Younger have had an advantage over those who ha taken exceptions to their methods.

It is possible, so far as Dr. Younger's Practice is co cerned, that more time will be required to determine i worth.

Admitting that a tooth may be retained in a ne socket made in the alveolus is only to acknowledge t sequel, or the succeeding part of transplantation.

Let us briefly analyze Dr. Younger's progress ar present position on the subject.

First.—His experience dates from the 13th of Jun 1885—a little less than two years, and about the san length of time that those who have experimented in tran planting begin to realize that the ultimate end of all the efforts is a failure.

Second.—He claims that he has had wonderful su cess; but every one who has transplanted has had an claimed, at first the very same thing.

Third.—The want of success in transplanted teeth ha been caused by the absorption of their roots ; a conditio of affairs which Dr. Younger, in one case, has admitted th he has observed on the roots of *implanted* teeth. Thus w find, in looking at the practice from a practical standpoin that while the Doctor cheerfully recommends for adoptio implantation, as being more permanent than transplant tion, he, at the same time, " out of his own mouth," virtually places it on the same level.

With this understanding of the question it seems hardly necessary to touch on the *rationale* of the process of repair. Those who have experimented and made observations, and tabulated their results, know that the roots of either a replanted or transplanted tooth will, after some time, in a great majority of cases, become partially absorbed, and that this is the direct cause of their "dropping out." Dr. Waters, of Boston, who has experimented largely in this direction, found this condition in almost every case.

It does not seem reasonable to suppose that Dr. Younger's theory regarding the reattachment is well founded, or that it will ever be adopted by the profession. In fact he has already in a frank and good natured manner acknowledged that he " had to make a theory " to fit the case, and that the theory of revitalization of the pericementum suggested itself to him as being the most natural. It seems more probable that when an implanted tooth becomes reattached to the jaw bone it is only in virtue of its being tolerated as a foreign body precisely as other foreign bodies in other parts of the system have been known to be tolerated, and become incapsuled in the jaw, is unquestionably a fact; but this, by itself from a practical standpoint, proves nothing regarding its future, inasmuch as both replanted and transplanted teeth, as above stated, are similarly retained.

In an article recently published in the " *American System of Dentistry*," I have stated that the process by which the " erosions on the roots of replanted teeth are formed is not fully determined. Dr. Rollins states that 'the microscopical changes wrought by it cannot be distinguished from the absorption seen in deciduous teeth with living pulps,' and claims that ' these lunar excavations seen in teeth with *dead* pulps are produced, as they are admitted to be in teeth with *living* pulps, by the agency of living cells.'"

This is the teaching of modern pathology, the pr
bility being that these cells, " giant cells," or " osteocla
secrete erosive fluids, which, acting on the organic as
as the inorganic constituents of the devitalized tooth
stance, produce their gradual decomposition, solution
absorption. The process has its parallel in the ero
found on osseous sequestra which have been imbedde
living tissue.

The conclusions which I have arrived at with regar
the practice and phenomena of replantation (which
good either for implantation or transplantation) may
thus summed up:

First—" That these teeth will, as a rule, reattach th
selves, and become firm in the alveolar sockets from w
they were taken; but the length of time they remain
useful condition varies in each case, and is dependen
the constitution and age of the patient and local
systematic conditions.

Second—"That a full vital relation may someti
though rarely, be re-established; but that usually it e
only during that period of time after extraction wher
root approximates a natural and normal condition,
terminates with the death of the peridental membrane
the protoplasmic constituents of the cement and den
the tooth then becoming a foreign body, and grad
undergoing disintegration through the action of giant-
or osteoclasts.

Third—" That devitalization of the peridental m
brane, cement and dentine usually speedily follows rep
tation, the tooth being then retained in position by fib
connective tissue and the granulations from the soft tis
penetrating the lacune and canaliculi of the cement.

Fourth—" That the severance of this connection
the failure the operator may be caused either by the g
ual loosening, resulting from continued oscilation, o
the supervention of acute inflammatory processes to
arrested only by the removal of the foreign body.

Fifth—"That in view of the possibility of danger and the certainty of ultimate failure attending this class of operations, the practice of replantation, either for the purpose of filling sensitive cavities, the treatment of neuralgia, or of alveolar abscess, or for the purpose of engrafting porcelain or other crowns, is unjustifiable."—*Items of Interest.*

ARTICLE IV.

A FEW ITEMS OF IMPORTANCE.

BY DR. E. PARMLEY BROWN, FLUSHING.

[From the Committee on Dental Practice in N. Y. Society.—E. Parmley Brown, C. F. W. Bodecker, W. C. Barrett.]

THE PERRY SEPARATOR.—The Perry separator has come, and come to stay, doing much good where properly filling its mission; but being also capable of doing much harm and becoming in the hands of the reckless an instrument of torture when used where not indicated. Many days of soreness to the parts about the teeth on which it is used may follow, but skillful work by the operator may in most cases enable him to dispense with extensive separating. The highest degree of skill may be displayed by the best restoration with the least degree of separation, the desired result of close knuckling being equally well attained. The separators are specially valuable where time cannot be had for securing space with cotton; but your chairman has adopted the universal practice of late years, of packing cotton between the teeth for a slight separation which is thereby obtained with the least discomfort of any system that he has ever seen, and at the same time fulfilling the double mission of producing space and driving the gum away from the locality of the work by the expansion of the cotton fibres—a few drops of Calvert's No. 1 carbolic acid and oil of cloves, in equal parts, being applied to cotton when so used. This medicament assists mater in obtunding and allaying irritation of the parts. In close contact, where it is desirable to use the cotto may be thoroughly placed by being driven between teeth with a steel wedge and a hand mallet.

THE KNAPP BLOW-PIPE.

The late birth of the powerful Knapp blow-pipe, w by nitrous oxide and illuminating gas are united in riage, producing the hottest thing yet known to the d world, and facilitating the use of porcelain and the m in crown and bridge-work, is another advanced step i march of our profession. The blow-pipe has been pe ed by the manufacturers; and the small furnace for ba teeth, in connection with it, we are premised immedia Though the blow-pipe may be too powerful for ordi soldering work, yet for supplying heat for the new fu for porcelain work it promises to prove a great blessi

THE E. PARMLEY BROWN PORCELAIN BRIDGEWORK.

After two years' constant use of the E. Parmley B porcelain bridgework, your Chairman wishes to unhesitatingly that he believes that he has builded better than he knew. In mouths where the gold bri work could not be tolerated an account of a diseased dition of the gums, produced by contact with the m the porcelain in contact with the gums is tolerated wit the slightest irritation; but exactly why this is so, th ventor is not as yet prepared to state. Recent exa ations of several cases inserted over two years encourage the inventor more than his most sanguin pectations promised. The anchorage of short bridges strong, firm teeth, by embedding the bar running thr the porcelain teeth into solid gold fillings, is strong satisfactory beyond the belief and comprehension of who have never done the work nor seen it done thorou and further, for natural appearance inside and outside of the arch, there is nothing that approaches it. This system of bridgework may be used in all its varied ways without infringement on any other patents, and will be withheld from the unprofessional advertisers, being licensed, at a moderate fee, to those who practice according to the Code of Ethics.

COCOAINE.

Your committee seem somewhat divided in its opinion of the recently introduced cocoaine. Dr. Bodecker pronounces it of no value in the excavation of teeth, but of great service for use on the soft tissues, the removal of deep-seated calculary deposits and necrosed bone. Your chairman found it of no value in the excavation of sensitive teeth till used in connection with carbolic acid and oil of cloves, the cocaine being carefully kept from the margins of the cavity, as the hydrochloric acid in the solution has great affinity for the lime salts in the tooth-substance, enamel, or dentine; and he has found by experiments on some difficult cases of excavation where the sound tooth-substance had to be removed for the anchorage of bridgework, that the application of these obtundants —cocaine, carbolic acid, and oil of cloves—not only relieves the temporary aching of the tooth (where the rubber dam is applied), but that they soften the tooth-substance, making excavation painless to the patient and easy for the operator till the zone of affected tooth-material is removed. Your Chairman has found the cocaine valuable in two other operations of great importance to the dentist: In connection with arsenic where a diseased pulp is to be destroyed and removed in a few days, none of the usual tormenting pains attending or following the application; and also where it is desirable to remove a living pulp immediately—a few applications of the cocaine making the operation painless in a few moments.

THE PERRY-WEBER DENTAL ENGINE.

The Perry-Weber dental engine seems to be a gre and valuable addition to dental machinery.

IMPLANTATION.

Replantation and transplantation seem to have co to life again, and implantation to be a child born to the Replantation, it is well known, has been successful in bu small percentage of cases in the past; and transplantati successful in but a very small percentage. In implantati Dr. Bodecker says he has little faith as yet. He does r believe a new socket is formed; and he is trying to obt a section of a socket in which a tooth has been implant to examine under the microscope, in which he has r succeeded, owing to obvious difficulties. Dr. Bodecke opinion in regard to implantation is that the tempora union between the tooth and the walls of the newly ma socket is merely a mechanical cementation, in which opi ion your chairman coincides; and he may astonish you stating that he performed the operation of implantati seventeen years ago when a superior central incisor w implanted in the place of a split " nubbin " of a superi lateral just extracted, because the space was much too wi for a lateral, and the socket had to be considerably enla ed to receive the central. A new socket was there practically made. Success was promised at first, but in year or more the tooth came out suddenly and witho any warning, though the root and the surrounding pa were in a healthy condition.—*Items of Interest.*

Editorial, Etc.

UNIVERSITY OF MARYLAND DENTAL DEPARTMENT.—*Another Letter from Dr. G. F. S. Wright, President of South Carolina State Dental Examining Board.*—

"GEORGETOWN, S. C., Nov. 15th, 1888.

Professor F. J. S. Gorgas, Dean of Dental Department University of Maryland :

Dear Doctor.—The Committee of which Dr. Levy writes, whose report he says I signed, held no meeting when I was present, and the final action was as I stated.

The roll was called, and as the Secretary called the name of an institution, the Presiding Officer, Dr. Waters, would ask if there was any objection, and if there was nothing said he would announce: "*No objection.*" I kept a score of the roll, and no one objected to the University of Maryland Dental Department. I have written this to Dr. Waters, who has written to me and stated his impression of the action. Dr. Levy says the proceedings will be published in the *Ind.* I am not in possession of any information except rumors from the Association of Dental Faculties; of these the impression made was not unfavorable to the School of which you are the Dean.

That the Dental Department of the University of Maryland was objected to is a mistake, it was not. No School in Baltimore was, but a Washington School did have objection made and was turned down.

I am very respectfully,

G. F. S. WRIGHT, D. D. S.

President of S. C. State Dental Examining Board."

CURIOUS FATALITY WHICH PURSUES THE FIRST-BORN SONS OF THE CROCKETT FAMILY.—There is a certain family in Boston which suffers from a mysterious hereditary curse of the sort one reads about in hair-elevating stories of the su natural. The first born son to every daughter bleeds to de The story as to the manner in which the affliction origin cannot, of course, be vouched for, says the Boston corresp ent of the St. Louis *Globe-Democrat.* It has to do wi wicked great-great-grandmother, who murdered a rich u by opening one of his veins with a poinard, in order to possession of the old gentleman's vast wealth. The gho the deceased subsequently appeared to the unscrupu niece and announced in hollow tones, appropriate to the to the dismal prediction that for all time thence-forth the el male child of every girl in her family should die by blee to death.

So much for the explanatory tradition. The fact is for many generations the Crockett family of Charlestow which is a part of Boston—and vicinity has been pursued hemorrhagic Nemesis. The first son born to every daug even to remote cousins, invariably bleeds to death. All o members of the Crockett tribe are exempt from the mys ious trouble. But the method of this inherited curse i well known that each female Crockett is prepared, on arrival of her initial boy, for the experience that is boun ensue. The first little cut, or even scratch, the infant ex iences is the signal for a panic. Bandages are applie quickly as possible, and the wound is treated with a prep tion of iron in the form of a powder. It is a narrow sq in such cases always, but there is a good chance of reco within eight days if the thing is taken in time. At the en that period the patient either gets well or dies from los blood very suddenly. For such is the manner of the blee complaint. He is sure to be attacked in precisely the s way every time during his after life that his skin is serio abraided. On occasions of the sort he must adopt immed measures remedial or die. By exercising the most extra nary precautions he may reach a comfortable age, but so or later he is sure to perish by an untoward accident, cau a flow of blood which no physician's art can stop. So fa a single one of the destined victims has escaped the pen The oldest one now living is a Mr. Surratt, of Melrose, has been accustomed, when he wanted a tooth pulled, to revise his will, visit his relatives and bid them good-by, as though it were likely to be forever. Life is an extra hazardous task when you are a bleeder. Thus it happens that eldest sons of the Crockett family, direct and collateral on the maternal side, are found to be engaged in grave digging and and other harmless avocations which are not likely to occasion incidental hurts.

A curious story is it not? And yet the writer begs to offer his personal assurance that it is true in every respect.

TOOTHMARKS MADE BY A BURGLAR LEAD TO HIS CAPTURE.—The circumstances of the detection of a colored man named Chandler Jones, who burglarized the store of J. L. Milton, of Hazlehurst, Ga., several weeks ago, are peculiar. The work was done by Detective E. A. Wilson, of Macon. It shows how that officer seized upon a slight clue and followed it to a successful result. When he arrived at Hazlehurst he made an examination of the store and found that the double door had been unlocked by the insertion of a chisel between the doors and gradually working the bolt into the lock. He then made an examination of the store, but saw nothing in the way of a clue except an apple out of which two bites had been taken. His detective instinct caused him to examine this apple, and he saw upon it toothmarks that were valuable. He saw that the two front teeth of the bites were not only irregular but peculiar. He imagined that when the biter was a boy an old tooth remaining in the gum caused a new tooth to grow one-sided, and it was now his resolve to find the man with that ingrowing tooth. The apple was placed in water so as to prevent shriveling, and keeping his secret to himself he went down to Baxley, where he knew there were a number of loafing negroes.

He found a group in a store and in the center of it was a real negro dude, and he was standing in an attitude that would have shamed a New York swell. The detective instinct came into play again and Mr. Wilson was certain that the dude was the man he wanted, but it was necessary to put him to the test.

Walking into the store, he bought a cigar. Then seeing som apples he bought a dime's worth, and, biting one, said to th crowd, "Here, I can't eat all these," and treated the grou with the apples. His eyes were upon the dude, and when th individual took one bite the detective was dead sure of h man, and when he raised the apple to his mouth for a secon bite the handcuffs were placed on his wrist. There never wa a more astonished negro. He was under arrest so quickl that he was unable to offer any resistance, and submitted t the handcuffing. He was wearing a suit of clothes stole from Mr. Bussey, of Chauncey, and a fine watch and chai taken from Mr. Milton. After placing Jones in the lock-u the detective found where he was stopping, and then he se cured the valise with a number of Milton's goods, and in th valise were the little cards attached to the clothing, and o which were Milton's cost and selling marks.

Jones was then taken to Hazelhurst, and at the stor showed how he went in with two others and made the hau When he first went in on the night of the burglary the fir thing he saw was a barrel of apples. He picked up one, an after two bites laid it down on Mr. Milton's desk. He owne up to the entire affair, and told where the other goods coul be found. He also confessed to having robbed Mr. Busse in Chauncey. And thus another apple caused man's downfal

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DEATH WHILE UNDER THE INFLUENCE OF NITROU OXIDE GAS.—Mrs. Elizabeth Cusick, aged sixty years, of N 193 Third avenue, died in the dental rooms of Dr. Theodo Albright, in New York, about thirty minutes after having ha some teeth extracted. Mrs. Cusick, with her daughter Mar visited Dr. Albright for the purpose of having four teeth re moved, and insisted upon taking gas, notwithstanding the den tist's advice to the contrary. She was a portly woman, and h feared she might be suffering from some form of heart troubl He finally administered the gas, after giving her a small dos of brandy. The operation of extracting the teeth was success fully performed. Soon afterwards Mrs. Cusick complained a feeling of oppressiveness. Medical aid was summoned and hypodermic injections were administered. Mrs. Cusick became unconscious and died soon after. Deputy Coroner Conway investigated the case and found that the woman died of fatty degeneration of the heart.

Monthly Summary.

EFFECTS OF MENTAL OVERWORK.—*A Common Form of Illness which is Generally Disregarded.*—Some interesting though not novel observations on the symptoms of mental fatigue were discussed at a recent meeting of the Anthropological Society. The result of these investigations goes to prove that weariness of mind, the result of work, like other forms of exhaustion, is recognizable under the two different though related aspects of irritability and incapacity. Further careful inquiry into the same subject would probably show that here, as elsewhere, the former of these conditions is introductory to the latter, and is the natural sequel to that stage of apparently successful overaction which is seen when an organ still fully capable is unduly stimulated.

The observations referred to were culled from a series of reports by school-teachers, and included details of their own sensations as well as of the children under their care. The signs of mental irritability were apparent in sleeplessness and nervous laughter; of fatigue, in sleepiness and incapacity for task work. Lolling, yawning, and a languid manner told that the will was flagging. Headache suggested overstrain in study combined with defective ventilation, and perhaps a too sparing diet; while some curious facts bearing on the causation of color-blindness and somnambulism were also noted. Thus, in one case the blue-color perception was for a time obliterated, and the sufferer from this defect found herself painting ivy leaves a bright orange; while in another a student, having tired to rest on the eve of an examination, awoke at his de to find that he had been busily engaged in drawing humor cartoons relating to a former conversation. Here we have instance of cerebral irritation due to overwork which sugge a somewhat close connection between dreaming and somna bulism, and affords a clue to the physiology of the latter c dition.

Overwork, both mental and bodily, is at once the m general and the least regarded form of illness to which we liable in the present age. Do what we may, it is next to i possible to escape from it; but there is, at all events, a cert satisfaction in being able to recognize its features. We m not forget, however, that it is also to a considerable exten preventable evil, and it is certainly a matter for satisfaction t this fact is not ignored by the reforming party in the Legi ture. Its treatment in individual cases requires chiefly t due attention be paid to the two great essentials of timely and wholesome diet. Work, however irksome, may, it is g erally allowed, be undertaken on a liberal scale if only it not too continuous, but is broken by timely and adequate in vals of rest. The value of a plain and liberal dietary is har less, and we may take it as a maxim for the times that, so l as appetite and sleep are unimpaired there is no danger degree of overwork, and, conversely, that a failure in eithe these respects should be regarded as a warning signal, to wh attention should be paid by relieving the strain of exertion *Lancet.*

DO ALL AMALGAMS SHRINK?—One of our popu writers says they do. This is as great a fallacy as his ass tion "that there is little difference in amalgams; they are made very similiarly." There is as much difference in an gams as in gold foils, and this is saying much.

We are aware that many amalgams shrink; but we also aware that an amalgam may be so made as to expa Why then may not the proportions of metals be so adjus that the compound will neither shrink nor expand? T this has been the aim of many manufacturers is without qu tion, and that some have attained this end there is no doubt.

The fact is "the trade" is in such a wretched condition that the demand for a low price is constantly tempting the manufacturer to debase his compound without regard to the result. The same author from whom we have just quoted says: "Thirty-five or forty per cent. of silver with sixty to sixty-five per cent of tin makes just as good an amalgam as any of the more expensive; and, therefore, it matters but little what amalgam a dentist uses." Accordingly, men are found reckless enough to make such a compound, and by giving it a high sounding name, and agreeing with their dealers to give them a half of the gross returns, the profession is flooded with it, and the only boast is that "It is offered at a remarkably low price."

Then comes the anathemas against all amalgams: "I filled teeth for Judge Story's wife only two years ago, and now they are a wreck. Don't tell me amalgam won't shrink. I have now demonstrative proof that it will shrink, and that the edges will break away, and that the teeth are ruined by it."—*Items of Interest.*

THE GLANDS.—The functions of glands are among the most interesting and most important of the organic processes. They rank next to the vital organs in importance, and any interference with their functions is serious.

They are numerous, and may be divided into the true glands, the lymphatic or conglobate glands, the ductless glands. Names are intended to be expressive of the quality of a thing, or function of an organ. If this rule had been followed in the naming of the different glands, none but the true glands would have been entitled to the appellation of gland. But they were all called glands before their respective functions were understood, and having once found place in our literature under this name, it was not advisable to change the names of any of them, but to designate them according to their respective functions. Certainly those organs which elaborate and give forth all the amazing varieties of animal juices, which, notwithstanding their variety, are all drawn from the same source, should be called glands. These are the true glands, and though the microscope shows scarcely a difference in the form and structure of the cells composing their tissues, yet the diversity of their secretions is something marvelous. There is no saliva in the blood, no gastric juice, no milk, no semen. The elements of these substances, even to the life spirit of the seminal germ, are in the blood, but the secretions themselves are elaborated in the glands by a cell action peculiar to each variety.—*Western Dental Journal.*

CIGARETTE SMOKING.—Prof. Dudley (*Med. News*) rejects the popularly held opinion that the baneful effect of cigarette smoking is due to the adulteration of the tobacco with noxious drugs, and by experiments on mice shows conclusively that the toxic agent is carbonic monoxide, which, however, results alike from the combustion of tobacco, whether consumed in cigarette, pipe or cigar.

A spectroscopic examination of the blood of three mice, dying after a very brief exposure to an atmosphere of cigarette smoke, showed an entire conversion of oxyhemoglobin into carb-oxy-hemoglobin, the cause of death being CO poisoning. As is well known, CO is exceedingly poisonous and in contact with blood converts the life-supporting oxyhemoglobin into the lethal carb-oxy-hemoglobin, a non oxygen-carrying compound, difficult of oxidation, which may cause death by suffocation, although there may be free entry of pure air into the lungs.

Cigarette smoking is only more harmful than cigar or pipe smoking because those addicted to the first habitually inhale the smoke, drawing into the greatest depth of the lungs the poisonous CO, the result of the combustion of the tobacco.

[A consideration of Dr. Dudley's experiments suggests that a wide difference exists between the effects of tobacco smoked and chewed, and that if the latter habit is filthier it is far less harmful. It is to be regretted that the evil resulting from smoking is not limited to the consumer of tobacco, but must extend to those who are unfortunate enough to be in the smoker's proximity. Patients should be cautioned against remaining in unventilated apartments in which smoking is going on, for the air in such places must soon become vitiated by the noxious CO. The ill effects of an atmosphere of tobacco smoke on young children and delicate females is thus explained.]—*The Polyclinic.*

WHERE DO TEETH DECAY?—When a dentist examines for cavities in a mouth which he has never seen, he looks in three places only: It is where the enamel dips down and forms a deep crevice,—either sulci in the top or the side of a tooth,—or makes a dimple somewhere there is no business to be a defect, he looks between the teeth, just below or above the point of contact; and he looks at the little creases near the margin of the gum. He need not look anywhere else. Why? Because the act of mastication and talking will generally keep the food from lodging on other portions of the teeth. And where no lodgement of food takes place, and the health of the patient does not cause excessive acidity of the oral fluids, there is no decay of the teeth. I know a man, fifty-three years of age, whose teeth are perfect in form and arrangement, though they never have been brushed; only one cavity, and that was where a dentist had used a file. He has simply washed them with water after every meal, yet he has a clean mouth. Now,some of you may remember a skull which I showed you, of a child six years of age, where the twelfth-year molars were not erupted, and yet all four were carious; cavities that no human power other than a filling for each could have prevented from involving their speedy and entire destruction had the child lived. No possible brushing could have kept them clean.—*Items of Interest.*

A WONDERFUL GERMICIDE.—A simple germicide prepared by Dr. J. D. Fernandez. is very efficacious. It is a composition of sodic hypo-sulphites, diluted sulphuric acid and spirits of lavender, and it is certainly most beneficial.

Mr. Dillon, before he was first taken ill, directed the doctor to prepare something for the telegraph operators. The doctor prepared this, and the telegraph operators have been using it regularly now for four weeks or over. Half a teaspoonful, night and morning, is the dose. Since then not a man in the operating room who has used this germicide has been taken sick. The telephone operators in the room over the telegraph office, by some misunderstanding, did not get any of the germicide, and all but one have been taken down. Two of the clerks in Mr. Dillon's office failed to take it, and they are both ill. Mrs. Dillon arrived here from Pablo on the day that Mr. Dillon was taken ill, and she nursed him through his sickness, being by him all the while. She took the germicide regularly, and hasn't been troubled with yellow fever at all. D. J. Crowley, manager of the office, nursed his wife during her sickness until her death, using the medicine punctually, and he escaped the fever.—*Jacksonville Despatch to N. Y. World.*

CAUSES OF MORTALITY.—Dr. Drysdale brings forward many facts to show that indigence is a potent cause of the high death rate in the civilized nations of Euorpe. He proves in many ways that insufficient food, clothing and shelter combine to raise the death rate far above what it is in those classes or countries living under more favorable conditions. Instead, therefore, of governments offering prizes and premiums upon large families, he would propose that they should put a fine upon any one, rich or poor, who in an old country produced more than four children.—*The Polyclinic.*

DETECTION OF CONCEALED INSANITY BY THE USE OF NITROUS OXIDE.—Hamilton relates cases in which patients, who carefully concealed their delusions, were made to display them fully while under the influence of nitrous oxide. He believes the gas to be very useful, also as a therapeutic measure in various mental disturbances, by effecting a diversion of morbid thought, or a temporary suspension of memory.—*S. Cal. Practitioner.*

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Infirmary patients, besides other operations. This means for practical ins
already assumed such large proportions that the supply has been beyond
the large classes in attendance during the past sessions.

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In addition to the facilities afforded by this institution for a thorou
instruction in the theory and practice of dentistry, the clinics in the Uni
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tumors, cancerous or benign, of various parts of the buccal cavity; plast
for the restoration of cheek, lips, etc., may be mentioned as having bee
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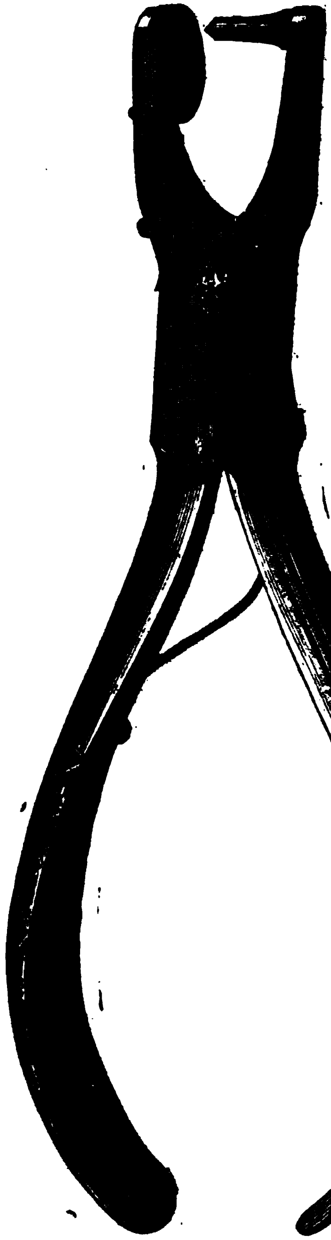

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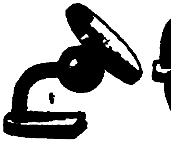

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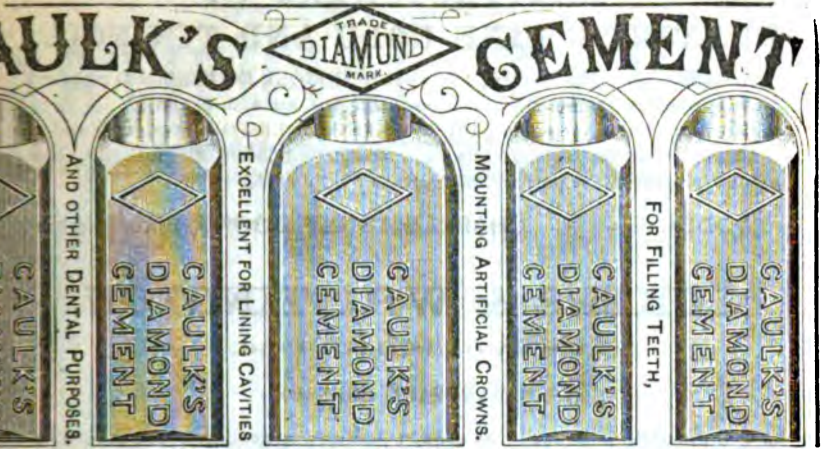

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Nos. 1010 AND 1012 KING STREET,

WILMINGTON, DELAWARE.

Having been fully recognized as producing a ***Superior Tooth*** at a very moderate ***price,*** now further avail themselves of this medium through which to call the attention of the Dental Profession to their manufacture. They have now brought the character of their ***moulds*** to a legitimate form in design and construction, and the ***shades*** of their teeth to that variety which affords the Dentist the opportunity of approaching the ***natural enamel.*** A very critical examination is solicited as to price and quality. Send for price-list.

For Sale by Dental Dealers Everywhere.

PURE GOLD FOIL

MANUFACTURED BY

J. M. NEY & CO.,

HARTFORD, CON

SOFT, TOUGH AND MALLEABL

CAN BE MADE AS ADHESIVE AS DESIRED BY RE-ANNEAL

Receives our personal attention in refining.

FOR SALE BY - SNOWDEN & COWMAN, BALTIMORE,

AND DENTAL DEPOTS GENERALLY.

Jacob J. Teufel & Bro.

DENTAL

FORCEPS

A SPECIALTY.

MEDAL AND DIPLOMA AWARDED BY THE

Centennial Commission, 1876

114 South Tenth Stree

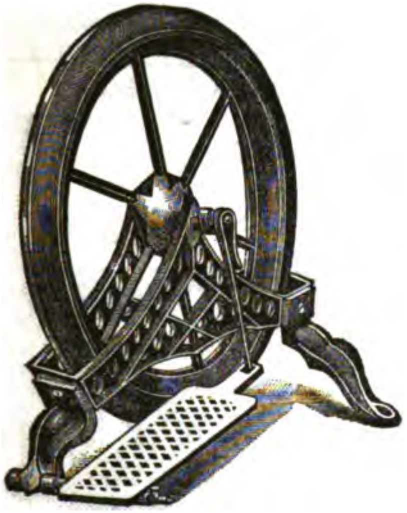
PHILADELPHIA.

All Our Forceps are Warrant

FOR SALE BY SNOWDEN & COWM

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - - - - ***$8.00***

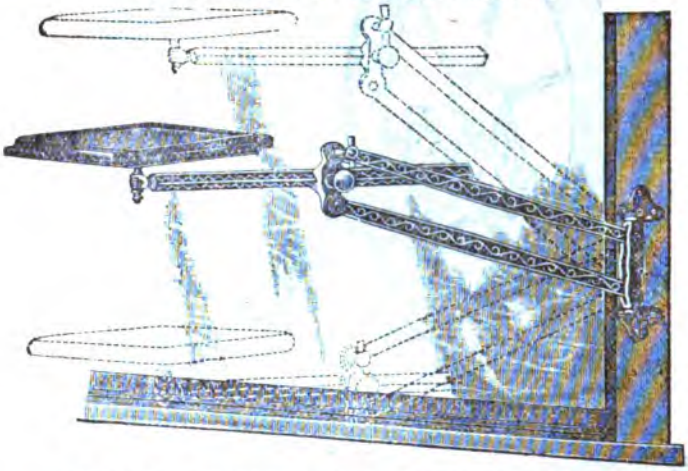
SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

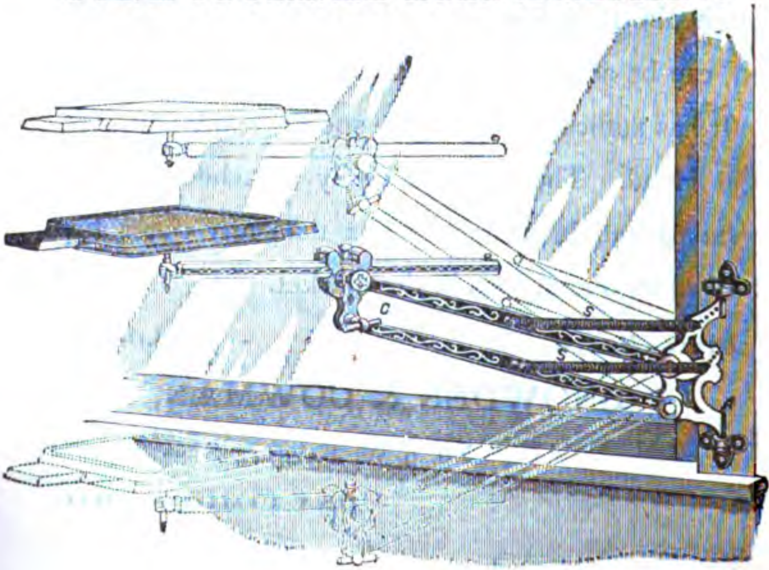
ALLAN TABLE.

STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides

CONE JOURNAL BOSS BRACKET.



Morrison Bros.,

NASHVILLE, TENN.

—KEEP A FULL STOCK OF—

White's and Justi's Teeth,

—ALSO—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

EVERY LEADING BRAND OF

GOLD, AMALGAM, and CEMENTS

KEPT CONSTANTLY ON HAND

——THE ATTENTION OF——

Western and Southern Dentists

IS CALLED TO OUR LARGE STOCK OF

Instruments and Materials

OF ALL RELIABLE MANUFACTURERS

Careful Attention Given to the Smallest Order.

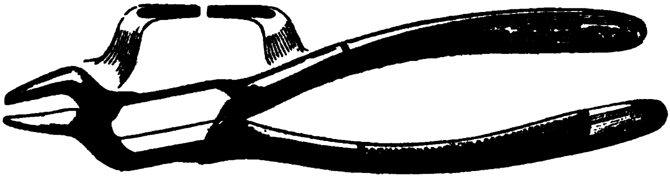
—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

REDUCTION IN FORCEPS.



We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen,	$2.00

ARTICULATORS

From	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials,	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound,	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound,	1,25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce,	$4.00

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce,	$4.00

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce,	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce,	$4.00

Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN,

MANUFACTURERS OF

Dental Chairs, Lathes, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,	$32.00	$16.00	$8.00	$4.00
Valleau's	30.00	15.00	7.50	4.00
Ney & Co's.	30.00	15.00	7.50	4.00
S. S. White's, ¼ Century,	30.00	15.00	7.50	4.00
" " Globe,	30.00	15.00	7.50	4.00
" " 1000 Fine,	30.00	15.00	7.50	4.00
R. S. Williams, Cylinders, A,	30.00	15.00	8.00	4.00
" " " B,				
" " Rect. Pellets,				
" " Standard,				
Watt's Crystal,	32.00	16.00	8.00	4.00
E. Rowan & Co.	29.00	15.00	3.20 per 1-10 oz.	
" " untrimmed,			5.60 per 1-5 oz.	
" " "			2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book.
S. S. White's, - - - - - - -	30 " " "
" " Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN,
No. 9 West Fayette Street Baltimore.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE.	15 Cts.	10 Cts.
For $15 00 net Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE,	15 Cts.	10 Cts.
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per. set of 14,	$ 1 00
" 11 " "	10 00
" 29 " "	25 00
" 60 " "	50 00
" 92 " "	75 00
" 125 " "	100 00

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,
DENTAL DEPOT,
9 WEST FAYETTE STREET, BALTIMORE.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
" " " 2. "	37 50
" " " 3, " (upright)	36 25
" " " 4, " "	37 75
" " " 5, " "	31 25
" " " 6, " "	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright " Leather Covered, " " "	10 00
" " Japanned, " " "	5 00
Gas Bag, 4½ gallons of capacity	2 25
" " 7 " "	3 50
Stand for 100 gallon Cylinder	4 50
" " 500 " "	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
" " 500 " "	35 00
Refilling 100 gallon Cylinder	2 50
" 500 " " 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	28	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 50	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 " " " "	3 75
20 " " " "	7 00
Pound	35

Boxing extra.

DENTAL PLASTER.

Barrel	$ 3 50
Half-Parrel	2 50
Quarter-Barrel	1 60
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

AMALGAMS.

Townsend's	$2.00 per
Chicago Refining Co's	4.00 "
Caulk's Par-Excellent Alloy,	3.00 "
Standard Dental Alloy,	6.00 "
Lawrence's	3.00 "
Arrington's	2.50 "
King's,	3.00 "
Sterling Amalgam,	3.00 "
Chase's Alcohol-Tight,	3.00 "
Olivers Amalgam,	3.00 "
" White Amalgam,	5.00 "

CEMENTS.

Roman Cement, best in the market,
Agate Cement, in 1 oz. Boxes,
" " " ½ "
Weston's Insoluble Cement, ½ oz.,
Dr. Flagg's Plastic Enamel, per Pk'g,
Fossiline, " "
Metcalf's Cement, " "
H. D. Justis's Insoluble Cement,
1 oz. Package, 1, 2, 3, 4 Colors,
½ " " any above "
H. D. Justis's Acme Cement,
One oz. Package,
Half " "
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge
" C. N. Pierce Phos. Zinc, " "
" T. O. Oliver's Oxy Phos, " "
" Smith's " Chloride, " "
Houghtons's Os-Artificial, " "
Poulson's Mineral Plombe, " "
Dawsons's Mineral Cement " "
Caulks's Diamond "
Per Package, 2 Colors,
" " 1 "
Caulk's Hydraulic Pebbles, large Pk'ge,

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.
Sam'l S. Whites' No. 1 Improved,	"
Holdfast Rubber,	"
Doherty No. 1,	"
" " 2,	"
Star Rubber,	"
Sam'l S. White's Bow Spring,	"
Whalebone Rubber,	"
Sterling Rubber,	"
Black Rubber	"

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,
Sam'l S. White's	"

SNOWDEN & COWMAN.
9 West Fayette Street Balti

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

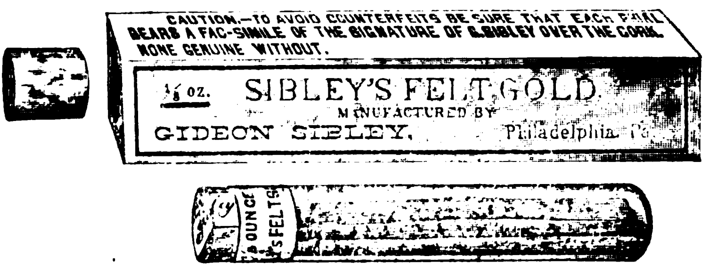
FOR SALE
AT ALL DEPOTS.

MANUFACTURED
—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.


CAUTION.—TO AVOID COUNTERFEITS BE SURE THAT EACH PHIAL BEARS A FAC-SIMILE OF THE SIGNATURE OF G. SIBLEY OVER THE CORK. NONE GENUINE WITHOUT.
⅛ oz. SIBLEY'S FELT GOLD
MANUFACTURED BY
GIDEON SIBLEY, Philadelphia, Pa.
OUNCE
SFELTS

GOLD FILLING MADE EASY

BY USING

SIBLEY'S FELT GOLD.

After a long series of experiments, I am now able to offer to the profession an entirely new form of Gold for Filling Teeth, which enables the operator to work more rapidly, with greater ease, and produce better results than with any other form of Gold. The Gold is prepared in strips of convenient thickness that may be cut with sharp scissors or a knife into pellets of any desired size. In color it

RESEMBLES FROSTED GOLD.

Is absolutely pure, thoroughly cohesive and homogeneous and readily spreads; conforming to the walls of the cavity.

MAKING A PERFECTLY TIGHT FILLING.

Unless the Gold is exposed to moisture annealing is unnecessary.

Full directions for use accompany each package.

That the profession may have an opportunity to test this Gold, without buying the usual minimum package, for a short time I will put up packages containing **1-40** of an ounce; price, $1.00.

PRICES OF GOLD AS FOLLOWS:

⅛ ounce, $4.50. ½ ounce, $17.50. 1 ounce, $34.00.

CAUTION.—See that a fac-simile of my signature is over the cork of each phial none genuine without.

CASH MUST ACCOMPANY ALL ORDERS FOR GOLD.

Needle Foil Carrier.

PATENT APPLIED FOR.

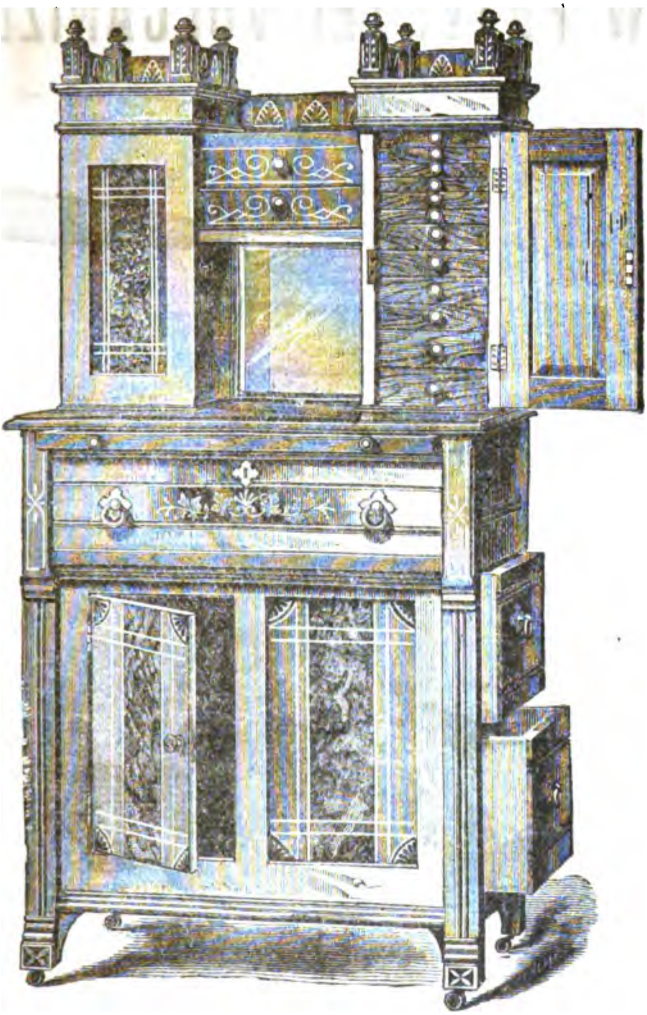
The cut in the margin represents the full size of this useful instrument.

It consists of a fine needle point, controlled by a spring with sufficient tension to hold it extended while picking up the Gold and carrying it to the Cavity, by pressure the Gold is then forced into position when the spring allows the needle to recede and free itself, leaving the Gold in place. This Carrier was especially designed for Sibley's Felt Gold, but will be found to surpass anything heretofore used for this purpose with any form of gold. Price, $3.00.

GIDEON SIBLEY,
13th & Filbert Streets.
PHILADELPHIA, PA.

FOR SALE BY SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

Improved Cabinet Case No. 10.



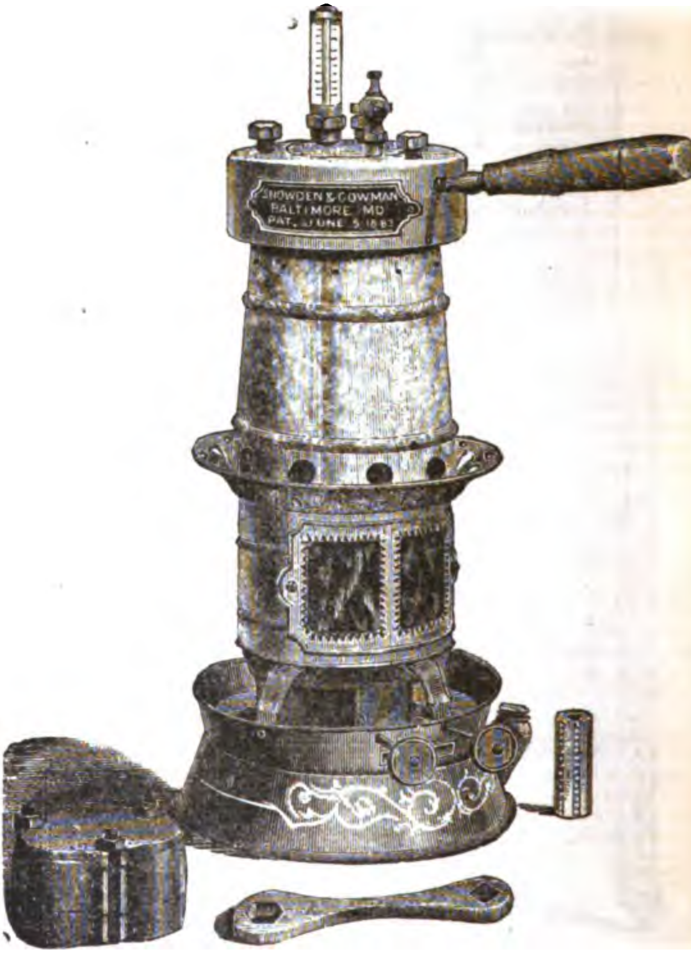
This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

PRICE,	with Wood Top (Boxing Free) - -	$45.00.
"	**With** Italian Marble Slab, (white) -	50.00.
"	" Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, TOLEDO, OHIO.

BRANCH: 29 Circle Street, INDIANAPOLIS, IND.

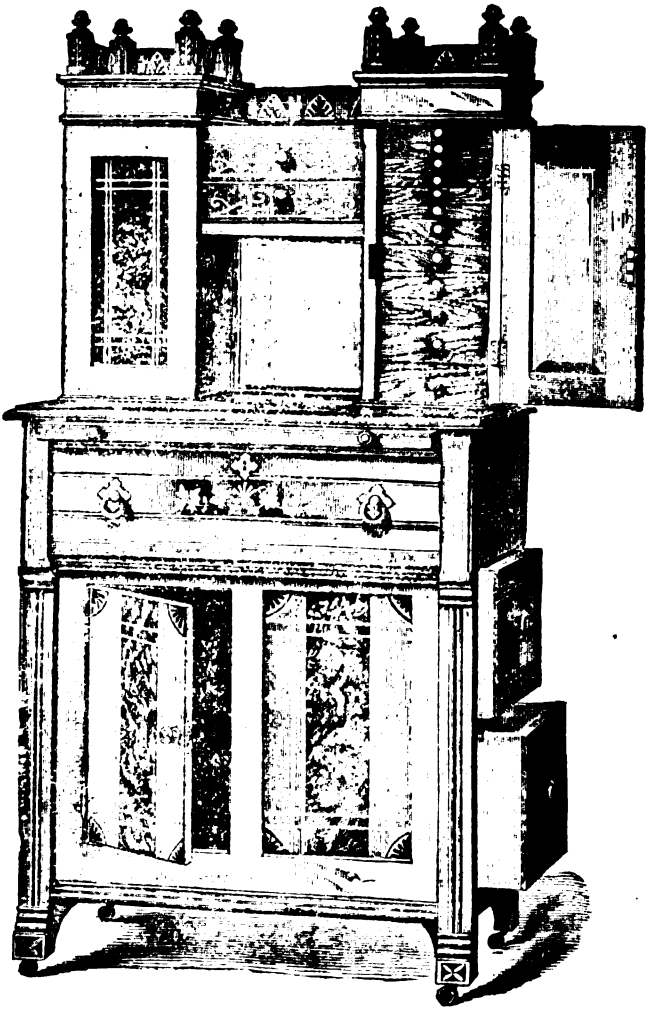
SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZE



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

Improved Cabinet Case No. 10.



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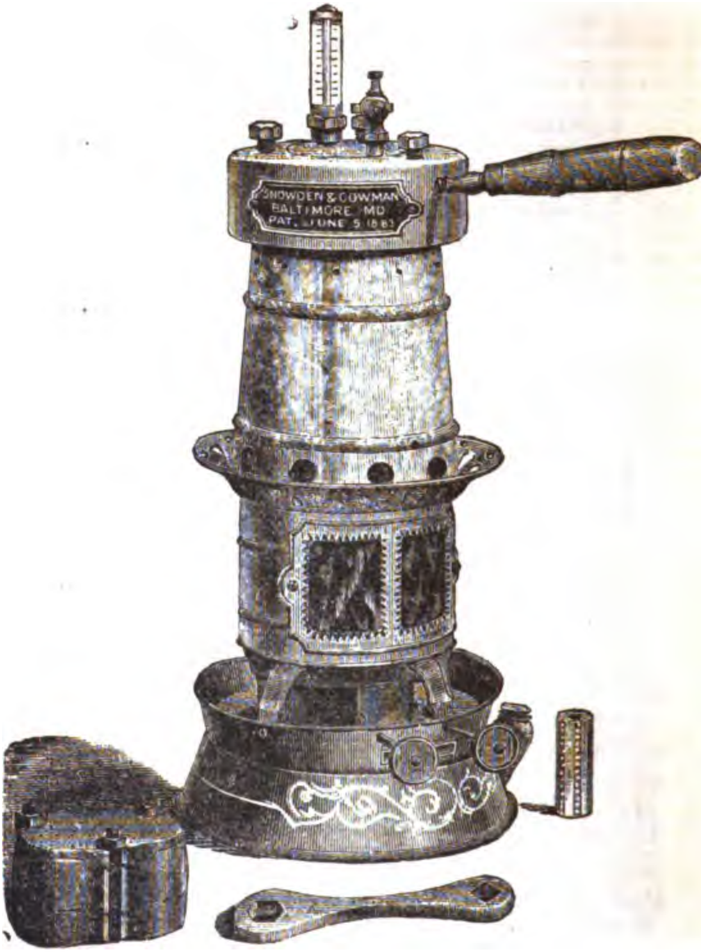
"	**With** Italian Marble Slab, (white) -	50.00.
"	" Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

NCH: 29 Circle Street, Indianapolis, Ind.

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZE



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

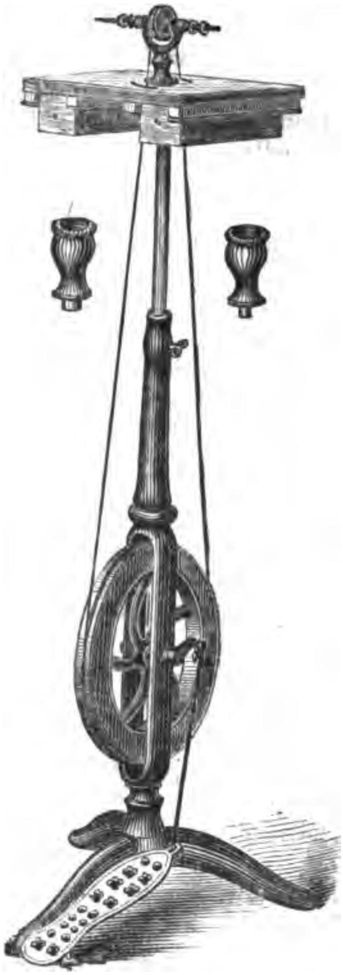
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - - -	15 00
" " Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - -	14 00
" " Fly Wheel, - - - -	8 00
Fly Wheel, No. 1, (New) - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - -	4 50
Hand Lathe, - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 5
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☛ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

American Lath



This cut represents
proved Lathe. It is made
very best manner, and is su
for either the *Office* or *Labo*
It has a solid spindle—one
which is a taper screw for br
felt wheels, and also, a spac
large corundum wheel. The
side of the spindle has a sp
a large corundum wheel
screw to receive the chuc
which very small corundum
can be placed.

It has a movable colum
table, which is capable of
elevated **Eleven** inches,
commodate the operator in e
sitting or standing posture.

Either end of the spindle
thrown towards the opera
more convenient, by the set
at the top of the column.

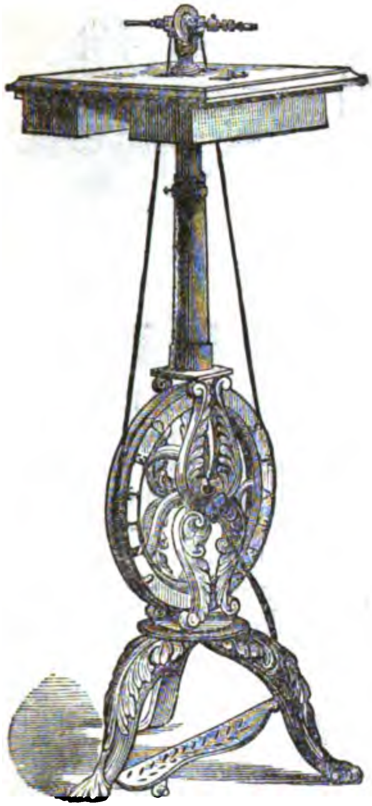
☛ We also make for this
a Socket Spindle—similar
U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - $15
" " with Socket Spindle, with two Chucks, 15
" " with Extra Large Driving-Wheel, 16
" Chucks, extra, - - - -

☛ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Bal

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding eth and polishing plates.

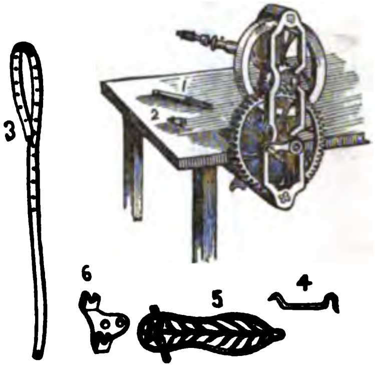
It has been gotten up in a superior manner, great care having been taken make it durable and efficient. It has a movable column and table, which capable of being elevated eight inches, to accommodate the operator in ther a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a w minutes, presenting a very neat and pleasing appearance, suitable for e office or laboratory. It is finished in bronze, and runs very light and eady.

rice of Lathe complete with Short Spindle, as per cut.	- -	$16 00
" " " " Long "	- - -	16 00
" Stand only, including Cord and Coupling,	- -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

Portable Hand or Foot Lat

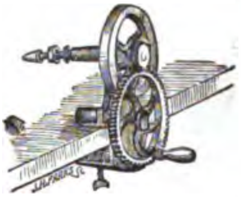


The above is a cut of a PORTABLE HAND OR FOOT L
which is very efficient, manufactured for the traveling d
weighs under 7 pounds, and occupies the space of 6 by 9
Members of the profession who have seen it pronounce it fi

Price, complete, - - - - - $6 00
Without Foot Attachment, - - - 5 50

Hand Fly Wheel Lathe.

Hand La



HAND FLY WHEEL LATHE.—It is intermediate b
the Hand Lathe, and the Hand and Foot Lathe; it weig
three pounds and is a first rate Lathe. - - PRICE,

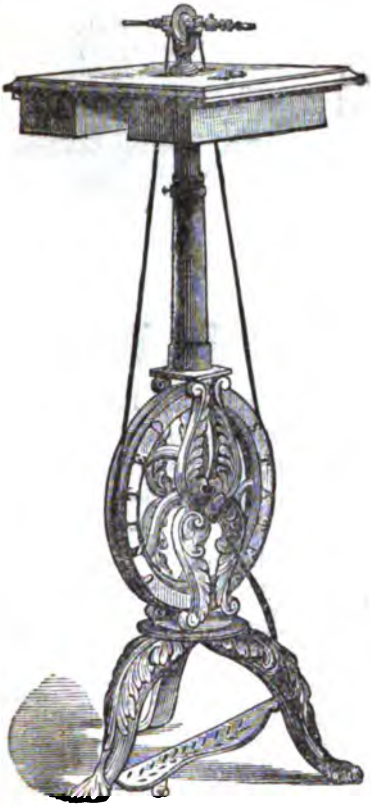
HAND LATHE.—It is small, strong and durable, and
only two and a quarter pounds; we have sold a large nu
these Lathes,—giving great satisfaction. - - PRICE

☞ All of the cog wheels of our Lathes are turned and
a machine, and are uniform, which makes them run true a
little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Balt

UNITED STATES LATHE.



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It can be packed in a box sixteen inches square, and can be set up in a ew minutes, presenting a very neat and pleasing appearance, suitable for he office or laboratory. It is finished in bronze, and runs very light and teady.

Price of Lathe complete with Short Spindle, as per cut. - -	$16 00
" " " " Long " - - - -	16 00
" Stand only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

BRITANNIA IMPRESSION CUPS

LONG HANDLES.

We Manufacture the following Sizes and Varieties:

UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.

ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.

PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the larg
FULL LOWER— " " " 12, 13, 14—(No. 12 is the larg
PRICE..............................Each....................25

SNOWDEN & COWMAN,

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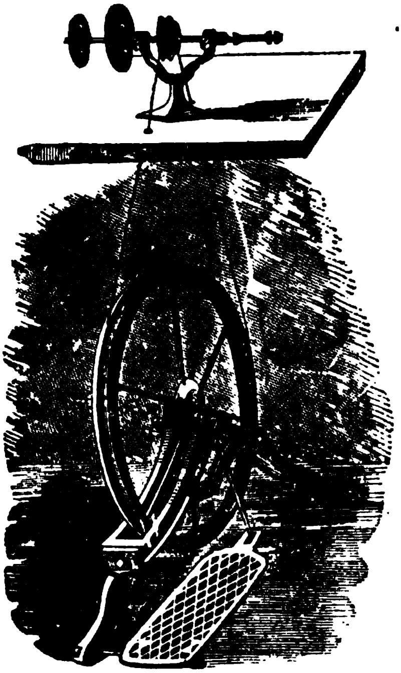
The Diamond Fly Wheel and Lathe Head.



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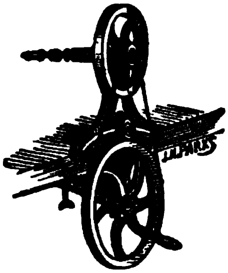
This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.
PRICE.......................................$8 00.

DIAMOND FLY WHEEL AND HEAD.
Complete, boxed.......................................PRICE $14 00

QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel with brass washers and two chucks complete. Weighs only four pounds.
PRICE.......................................$4 50

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ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
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UPPER AND LOWER CUPS.

PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the larg
FULL LOWER— " " " 12, 13, 14—(No. 12 is the larg
PRICE..............................Each.....................25

SNOWDEN & COWMAN,

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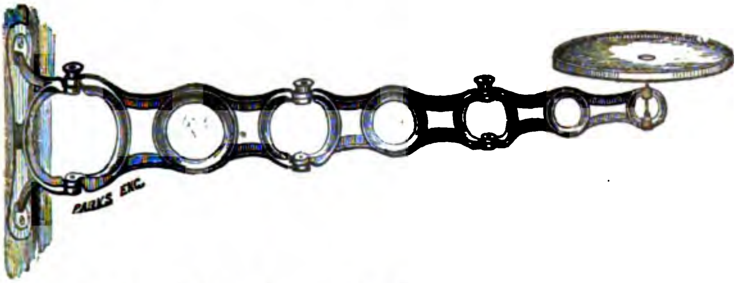
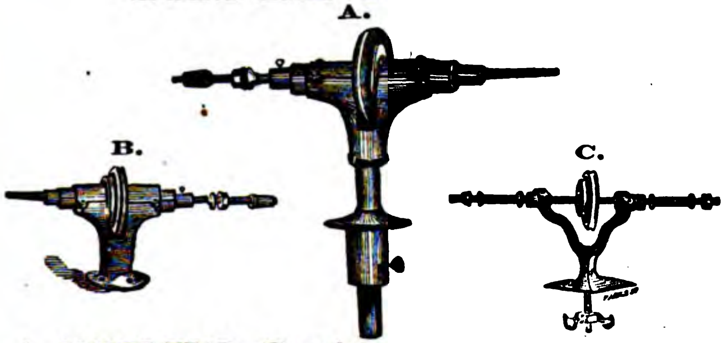
Snowden & Cowman's Extension Bracket.



This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

Price, Round Table as per cut, - - - - - - -	$6 00.
Square " with drawers. - - - - - - -	8 00

TABLE HEADS.



A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table.................................PRICE $5 00

B.—U. S. LATHE HEAD, with holes in the base to screw to any table.
PRICE—Short Spindle (as per cut B)................$4 00
" Long Spindle........................... 4 00

C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which retain the wheels and brushes, are of Brass. The spindle is of the best unannealed hammered steel, and of the size to suit the holes in the wheels.
PRICE.................. ....$6 00

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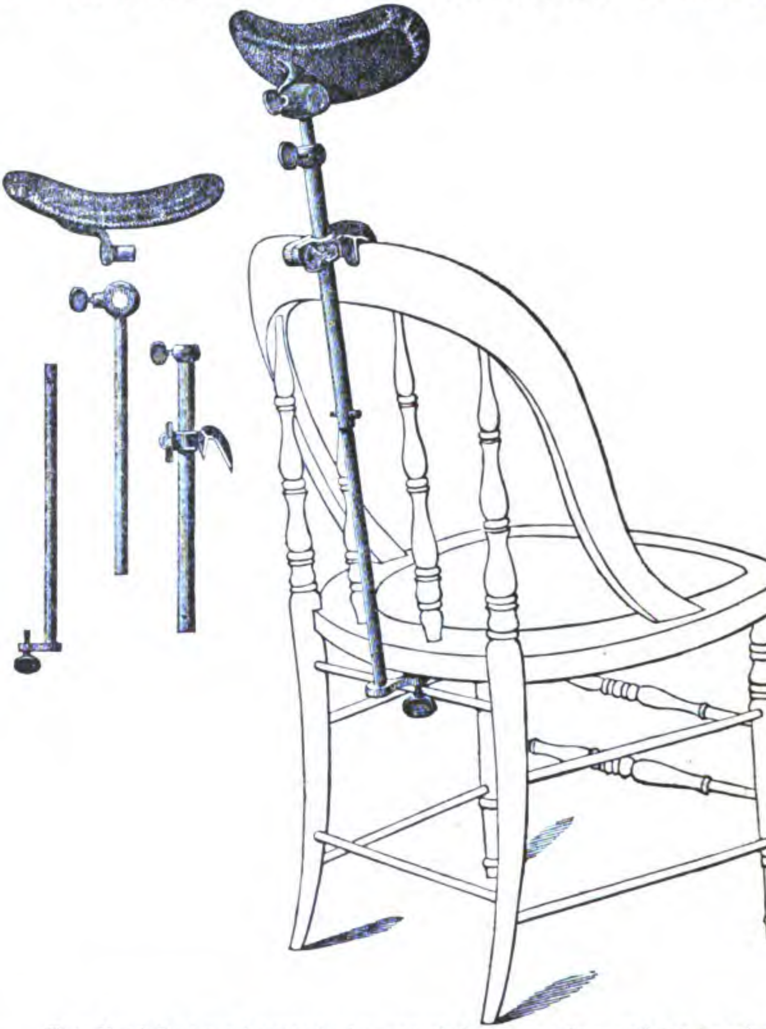
SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Res



This Head-Rest can be attached to any chair, is very firm, and can be raise
ered or moved backward or forward without interfering with the attachmen
chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE,

SNOWDEN & COWMAN'S
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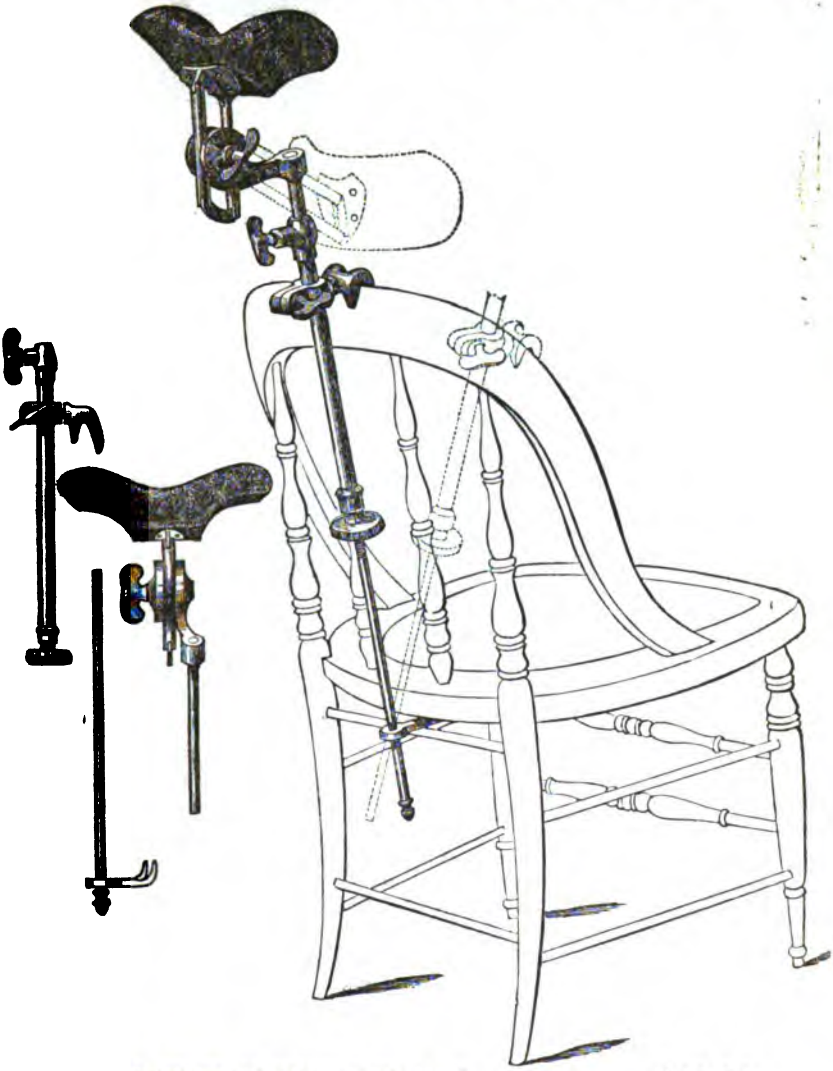

PRICE, Full Nickel Plated, - - $10.00

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SNOWDEN & COWMAN'S

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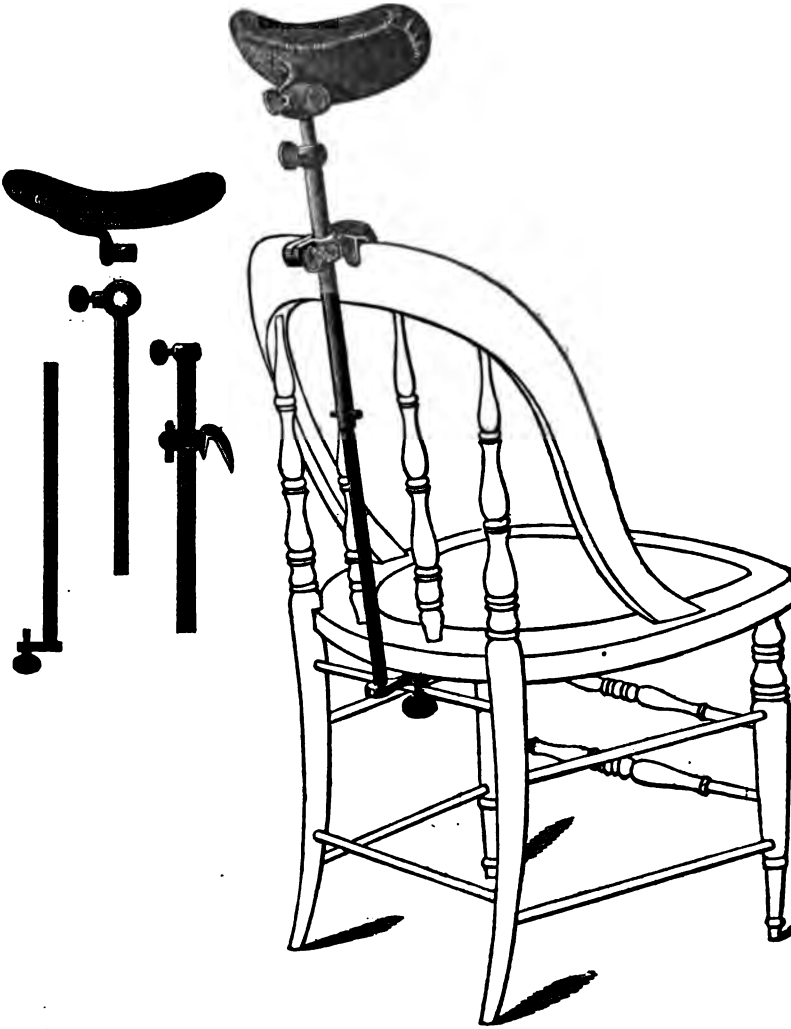

This Head-Rest can be attached to any chair, is very firm, and can be raised, ered or moved backward or forward without interfering with the attachment t chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5

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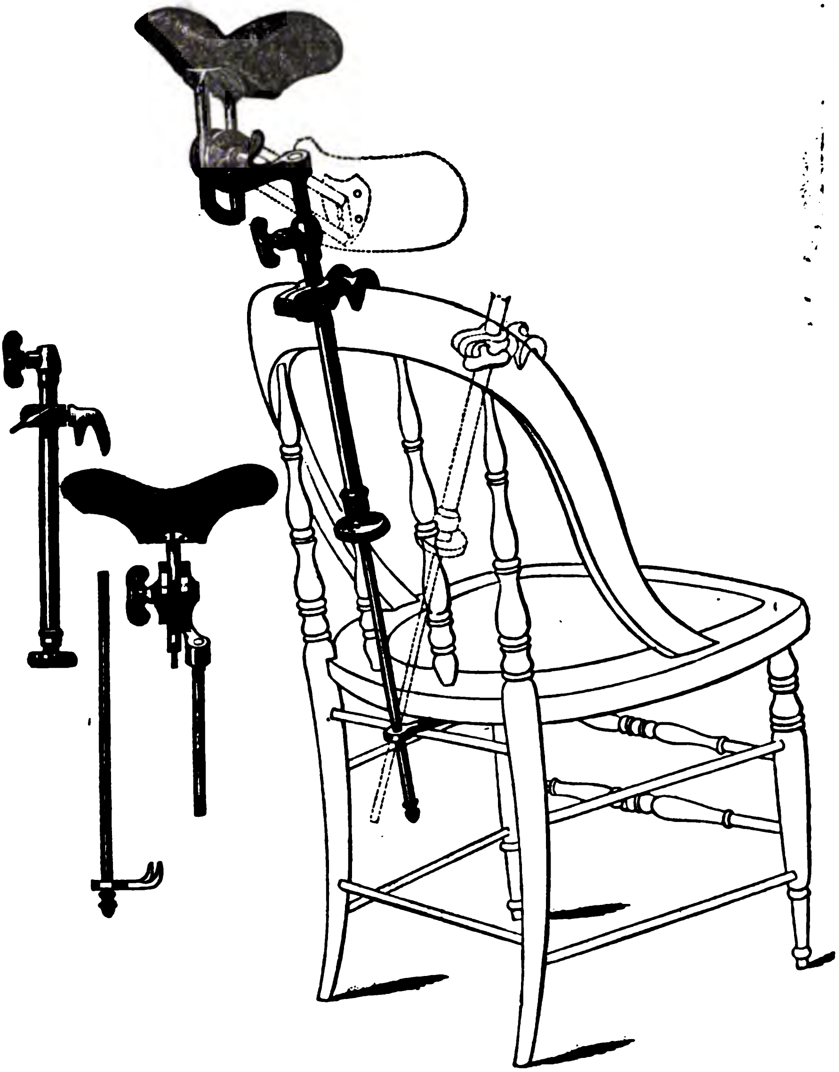

PRICE, Full Nickel Plated, - - $10.00

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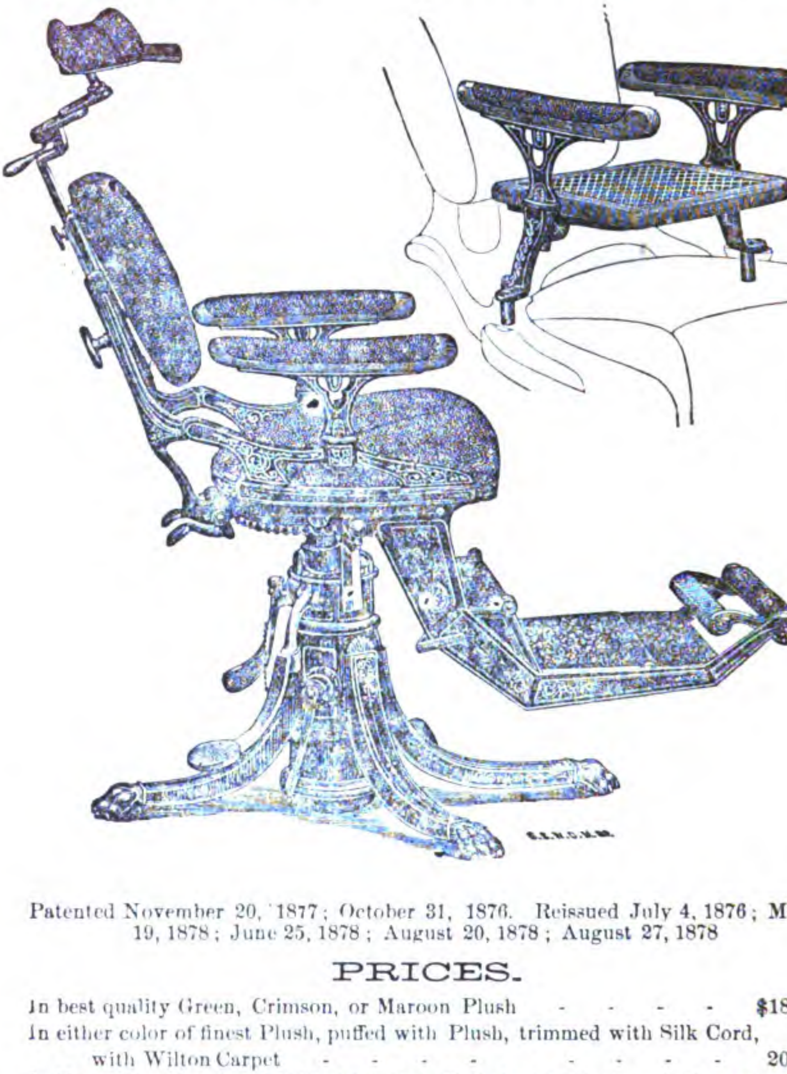
The Improved Wilkerson Cha



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; M
19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

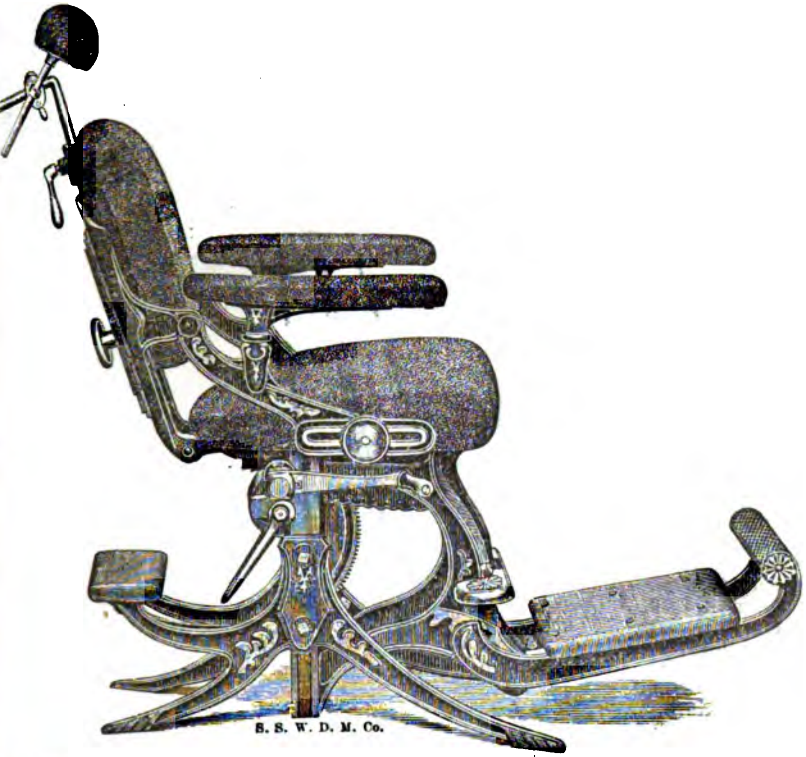
PRICES.

In best quality Green, Crimson, or Maroon Plush - - - - -	$18
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet - - - - - - - -	20
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match - - - - - -	21
In Crimson Plain Turkey Morocco or Leather - - - - - -	18
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests -	21

BOXING FREE.

For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, M

THE CYCLOID CHAIR.



atented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while fording a variety of essential movements, could be sold at a lower price than the ilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surasses anything heretofore offered for the money, the Cycloid is *the* chair. It is rongly built, and the finish and general appearance make it a desirable addition to well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is orked with great ease and rapidity. Should the crank by accident slip from the and the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator d yet be of service to the patient.

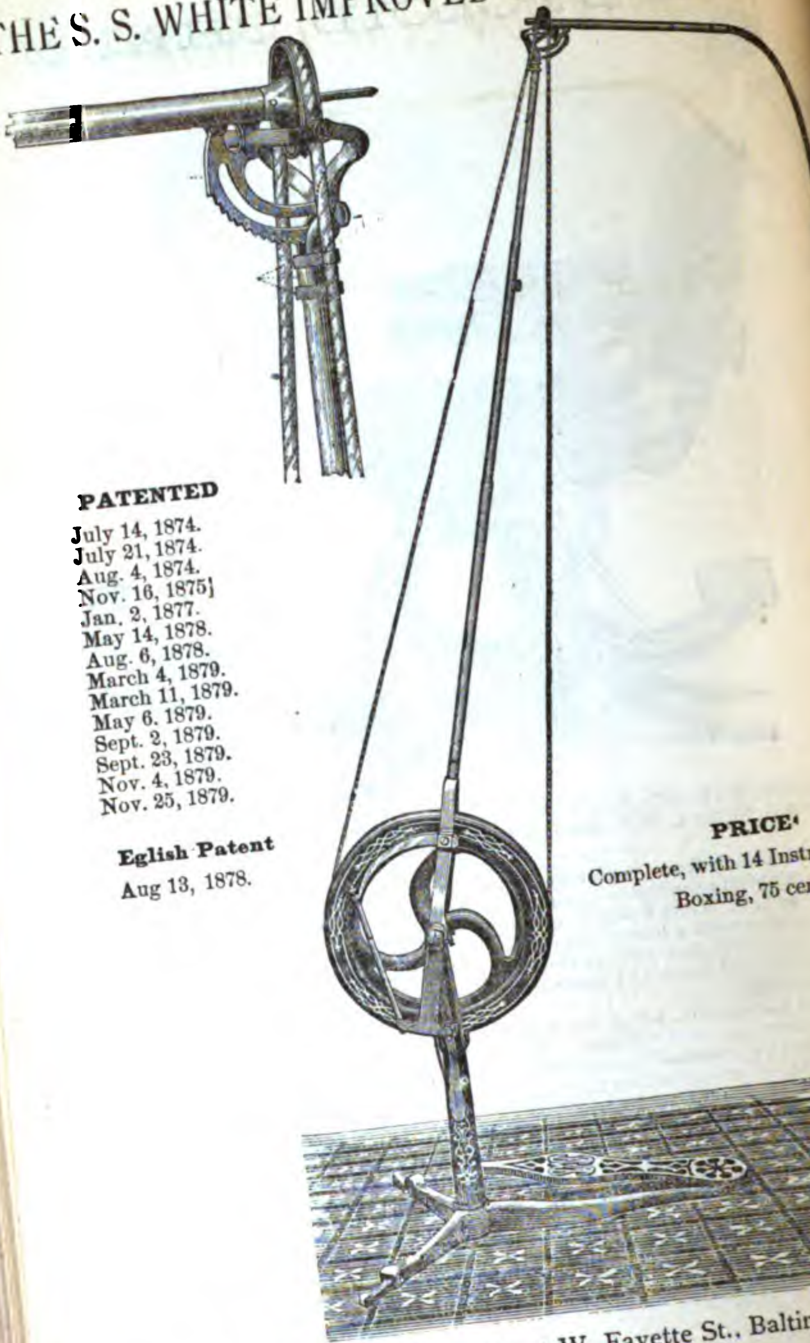
The foot-board can be adjusted in four positions, and a permanent support for e foot of the operator is placed at the back of the base, the convenience of which ill be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the de of the Chair.

Price, upholstered in Corded Materia., - -	$ 80 00
" " " Best Quality Maroon or Green Plush,	95.00

For Sale By SNOWDEN & COWMAN.

THE S. S. WHITE IMPROVED DENTAL ENGINE.



PATENTED

July 14, 1874.
July 21, 1874.
Aug. 4, 1874.
Nov. 16, 1875.
Jan. 2, 1877.
May 14, 1878.
Aug. 6, 1878.
March 4, 1879.
March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish Patent

Aug 13, 1878.

PRICE

Complete, with 14 Inst
Boxing, 75 ce

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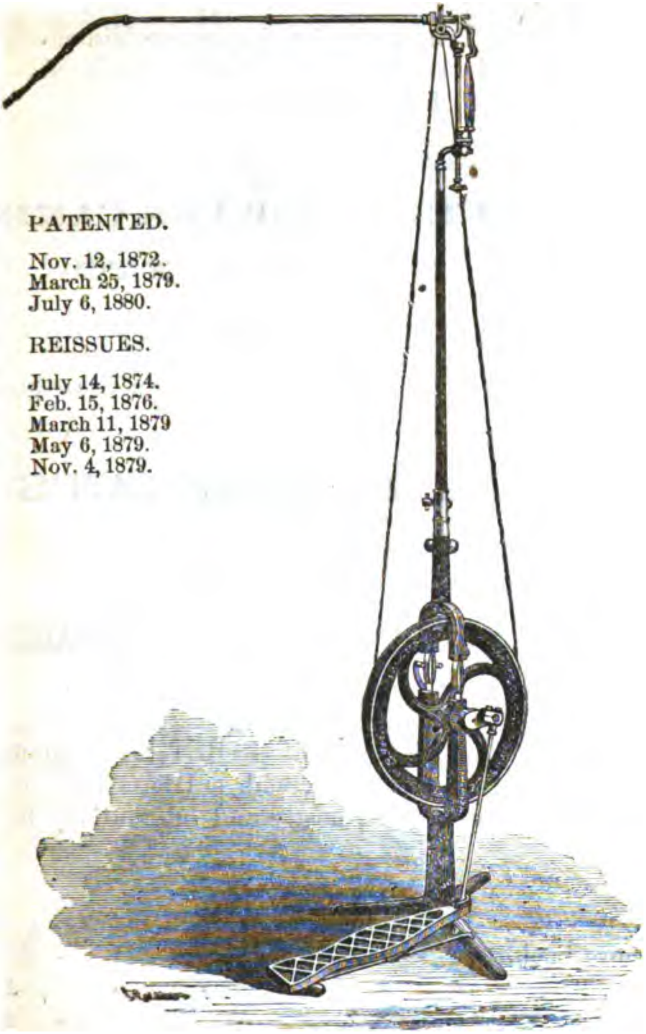
THE JOHNSTON DENTAL ENGINE.



PATENTED.

Nov. 12, 1872.
March 25, 1879.
July 6, 1880.

REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879
May 6, 1879.
Nov. 4, 1879.

PRICES.

Engine	$40 00
Boxing	75

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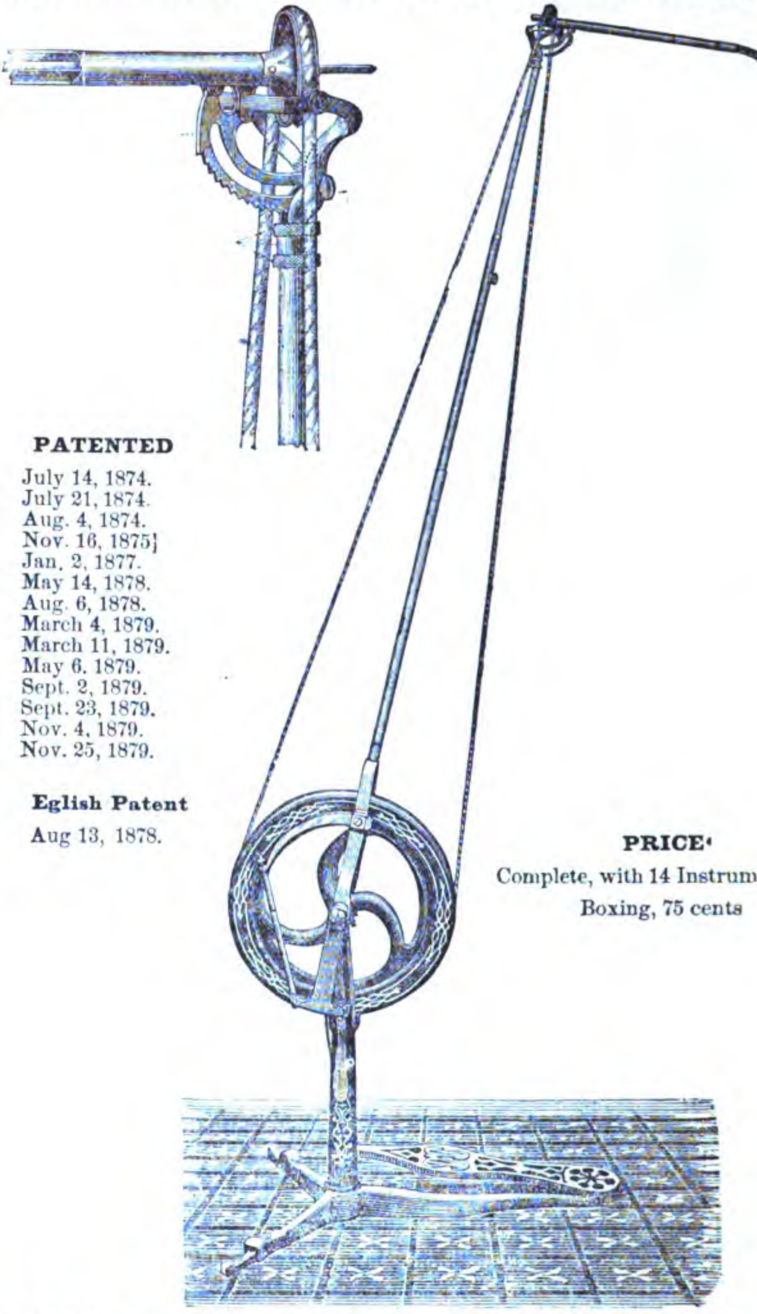

PATENTED

July 14, 1874.
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Aug. 4, 1874.
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May 14, 1878.
Aug. 6, 1878.
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March 11, 1879.
May 6. 1879.
Sept. 2, 1879.
Sept. 23, 1879.
Nov. 4, 1879.
Nov. 25, 1879.

Eglish Patent

Aug 13, 1878.

PRICE

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Boxing, 75 cents

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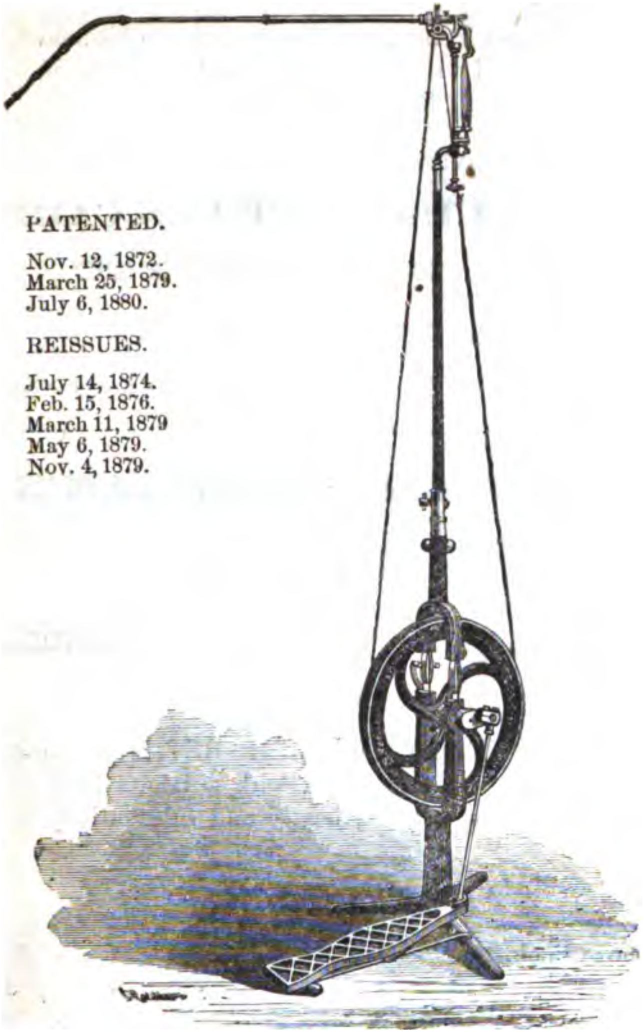

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REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879
May 6, 1879.
Nov. 4, 1879.

PRICES.

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Boxing	75

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Artificial Teeth and Dentists' Mate

THIRTEENTH AND FILBERT STS.
PHILADELPHIA, PA.

DENTISTS!

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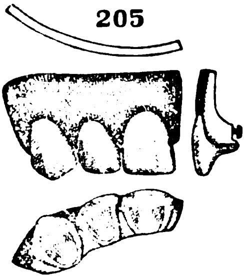
unless you want to economize in time, and
quently save money. To accomplish this resu
must have the best Teeth in the market, and th

Gideon Sibley's Improved Artificial T

From this claim we except no make of Teet
eign or domestic, and it is daily substantia
the unsolicited testimonials of thousands of De
many of whom use these Celebrated Teeth exclu
Sample sets, $1.00. For sale by all dealers. S
cards and abridged price list free by mail.
ders for Teeth and Dental Supplies will receive p
and careful attention.

205



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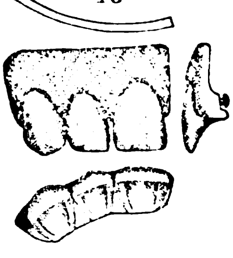

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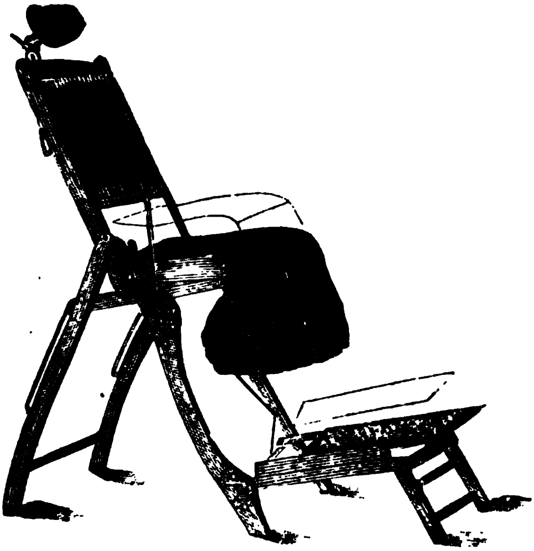
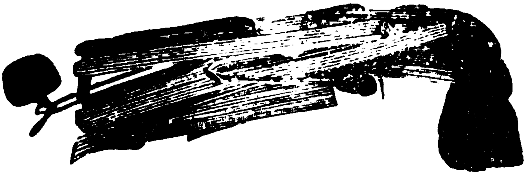
DR. HENKLE'S

Portable Folding Dental Chair.

The Simplest, Lightest and Best Chair yet offered to the Profession.





Weighs about forty pounds, according to finish. Can be eadily folded into one compact space convenient for carrying in he hand, making a package 34 inches long, 18 inches wide and inches deep. Combines all the movements necessary in dental operations. Has been tested and approved by experienced dentists.

Price, with Perforated Seat and Back, $40.00.

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BALTIMORE,

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on Pages 26 and 27
of this issue.

DECEMBER, 1888.

THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.

VOL. 22 THIRD SERIES. NO. 8.

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Communications intended for publication, and exchange jou and papers, should be addressed to the Editor of THE AMER JOURNAL OF DENTAL SCIENCE, No. 845 N. Eutaw St. Baltimore, All letters relating to the business of the JOURNAL, or containing remittances, to be directed to Messrs. Snowden & Cowman, No. Fayette Street, Baltimore, Md. Articles for publication should b ceived by the Editor at least two weeks previous to the first o month on which the number in which it is designed for them to ap is issued.

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EDITORIAL.

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Death by Electricity . The New Method of Executing Criminals.

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THE
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—OF—
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OL. XXII. THIRD SERIES—DECEMBER, 1888. No. 8.

ARTICLE I.

REVIEW OF J. C. REEVE, M. D., OF DAYTON, O., ON "ANÆSTHETICS IN DENTAL PRACTICE."

BY S. J. HAYES, PITTSBURG, PA.

My attention has just been called to an article that ppears in the October number of your journal in which ome very *unjust* as well as *unkind* remarks in reference to e *knowledge* and qualifications of dentists in the administration of anæsthetics, etc., are made, to which (through our kind indulgence) I desire to refer and if possible disbuse the author's mind of some of the errors he has spoused and is *tenaciously advocating*.

I might not feel disposed to take special notice of the rticle in question, were it not that the author is quite rominent as a surgeon, stands at the head of a hospital taff in his city, is somewhat "looked up to" for the knowledge that he *assumes* to possess and seems to belie that what he does not know about anæsthetics and ana thesia is not worth knowing. In fact, he assumes to be educator of the dental profession and one of high authori in the article to which we now refer. It is *flaunting* *headed*

"ANÆSTHETICS IN DENTAL PRACTICE."

BY J. C. REEVE, M. D., DAYTON, OHIO.

Thus it will be seen that he feels the importance of *superior knowledge* of the science of anæsthesia and ana thetics as well as such a deep interest in the welfare humanity and *especially* of the *dental profession* that *magnanimously* volunteers to give the dental profession benefit of his superior knowledge and extensive experien as well as *sound advice* to leave anæsthetics alone and tu the use of them over to the M. D's.

But as we find even in the present age of progressi too many in both the dental and medical professions a *especially* in the *latter*, who are quite thoroughly educat without being learned, or possessing very little learning knowledge, it is *important* that we discriminate in investigation of science between the mere *opinions*, or *dogmas* of those who *assume* to be our educators and gu dians and the truths pertaining to the science. Some m possess a *jealousy* of the knowledge of others and of ot professions of a kindred nature without being consciou the fact. I will not say that this seems to be pre-eminen the case with Dr. Reeve as I might be liable to the char of doing him injustice, but will allow his own language his premises to represent him—"As I am *decidedly oppos* to the administration of chloroform and ether by dentis I will commence by disclaiming any disposition to consid the paper or the subject in any other spirit than that science." The author is here referring to an article t appears in the September number of the *Dental Regis* from the pen of J. E. Harris, M. D., D. D. S., but as dwells in his remarks very little upon the article, we shall only deem it our duty to treat of the thoughts that he advances in his article, under the influence of the *genial rays* of the science to which he is so devoted.

As the doctor refuses to "consider the subject in *any other spirit* than that of science" it may not be amiss to remind our *learned* friend that "science embraces those branches of knowledge which give a positive statement of truths as found in the nature of things," and that when we investigate science, we are after truths and not mere *opinions* or *dogmas*.

Now, I propose to show that this self-constituted educator of the dental profession and gracious benefactor of the public, like many other M. D's who assume to *know* and to have *superior knowledge*, is *utterly ignorant* of the first principles or A. B. C. of the science to the defence of which he has devoted the article in question. In so doing, I shall not call in question his success as a surgeon, as that does not depend so much upon *knowledge* of any science as upon *self-confidence* and *assurance*, of which the author—it will be readily seen--has an abundance. But I will simply demonstrate that Dr. Reeve displays less knowledge of the science of anæsthesia and anæsthetics than would be expected of the most *ignorant charlatan*, though he may have used the agencies to which he refers extensively.

In the first place, the M. D. does not appear to have a clear conception or knowledge of what constitutes anasthesia, and consequently, is unable to distinguish between an anæsthetic and an asphyxiating agent and hence (I submit), is utterly incompetent either to *select* or *administer* an anæsthetic. For if a certain or definite condition be necessary for a *safe* and *painless* surgical operation, it is *very important* that the person who undertakes to put the patient in that condition, should know *definitely* what that condition is, as well as to know in what respect it differs from other conditions to which it bears some resemblance, but which are known to be *injurious* and *dangerous*.

It *is*, and *must* be admitted that this very desiral
condition is the one in which the *forces* and *functions* of l
are in continuance under modification. This modificati
may be induced by suitable narcotics or by *free oxygen*
by both whereby an absence of sensation is attained. T
force of life or that out of which *vital force*, is generated
free oxygen. This is found abundantly in the atmosphe
and is in fact the only element under heaven that will su
port combustion or sustain either vegetable or animal l
Therefore, it is the *all important* element in your anæsthe
and without which you cannot have an anæsthetic nor c
you produce anæsthesia. Any agency that does not co
tain *free oxygen* when administered, can only produce
phyxia and if continued death. It does not matter w
your agency is, if it does not have sufficient *free oxygen*
sustain life it cannot produce anæsthesia, but will inevital
produce asphyxia and if continuously administered dea
And yet, Dr. Reeve calls nitrous oxide gas an anæsthe
and commends it to the use of the dental profession ; wh
if he knows anything about its composition, he should kn
that it has not a particle of *free oxygen* in it and that it c
only produce asphyxia which always does such *violence*
the *laws* of nature no matter whether it be produced un
water, in the *mines*, or by giving exclusively nitrous ox
gas, olyphiant gas, carbonic acid gas, nitrogen gas,
chloroform or ether or anything else that does not cont
sufficient *free oxygen* to sustain life, that *great injury* to t
nervous and *physical* constitution must *inevitably* be t
result. Therefore, as the eminent Dr. Richardson said
one of his lectures "the use of nitrous oxide gas should
prohibited by law." While *insensibility* is an attribute
asphyxia as well as of anæsthesia, yet they are *radica*
different and *diametrically* opposite in their tendencies a
results. The former may be properly designated as "
first step in at death's door," while the latter is the hap
state of *insensibility* with the continuance of the forces a
functions of life under modification. If chloroform, eth

itrous oxide gas or anything else, that does not contain *ree oxygen* be given without admitting the air by which *ree oxygen* is supplied, nothing but *asphyxia* and *death* can e the result. Hence, he who cannot recognize the radical ifference between the conditions known *properly* as anæs-iesia, syncope and paralysis, should not be permitted to dminister an anæsthetic. no matter whether he be an M. ., or a D. D. S. For neither the M. D., nor the D. D. S. ppended to a man's name, makes him of itself any more ompetent to select or administer an anæsthetic, only as it iay exist in the minds of those of very *limited* knowledge ho have been educated to think that the M. D. has a iagic that *transforms* and confers *omnicience* upon the therwise ordinary personage.

But why is Dr. Reeve so "decidedly opposed to the dministration of such anæsthetics as chloroform and ether y dentists?" Is it because they have less acquaintance ith the so-called anæsthetics or know less of the science f anæsthesia than the physicians? To which profession the credit due for the discovery and introduction of the iost of the pain obtunding agencies that are used to-day? r. W. Wells, a well-known dentist, who discovered that isensibility to pain could be produced by the use of *nitrous xide* gas, was the first to give to the notion its practical mbodiment by the extraction of a tooth without pain. Dr. Iorton, a former pupil of Dr. Wells, who discovered that rated ether could produce anæsthesia, was the first to ntroduce its use as a pain obtunding agency in the painless xtraction of teeth. For tooth-drawing chloric ether was rst employed in this country by Dr. Jacob Bell, and Dr. ansom, an English writer says: (page 259 "Sansom on hloroform.") "Since the introduction of chloroform that gent has been employed almost *exclusively* in this country s an anæsthetic in dental operations." But when these gencies were first introduced a terrible *remonstrance* was resented by many of the M. D'.s at the use of these dan-erous elements and then as now they were the accusers of the dental profession for the using of agencies of whi they know nothing about, thus pretending that they kn all about them and that they are the proper custodians humanity.

As Dr. J. E. Harris, in the paper on which Dr. Ree bases some of his remarks, properly and *correctly*, intimat that the main reason why the *general impression* is exta that " it is more dangerous to administer anæsthetics f dental operations than for general surgery " and that mo deaths have occurred in the dental chair than on the gyn cological chair or table, " is the *great difference* in t *sequel* to a death under the hands of a general surgeon a a death under the hands of a dentist or oral surgeon." a physician loses a patient from the use of the so-call anæsthetics, there is first usually a better opportunity *cover up* or *conceal* the real cause of the death and no dou thousands af deaths, that have been caused by the *impro* preparation and administration of anæsthetics and were *reality* deaths from *mal-practice*, have never been report The cause of death having been assigned to the nature the *severe* operation, or to the peculiar diseased conditi of the patient. If the death occurs during the administ tion of the anæsthetic and previous to commencing t surgical operation, there is *usually* an effort to find a d eased condition of the heart, the lungs, or the brain, and course that is not difficult to find and the physician *relieved* of a suit at court for *mal-practice* and the *odiu* that might otherwise rest upon him in his community. has several influential friends in his own profession a usually of his own school (physicians are not general jealous of each other as dentists are of their brethren,) w sympathize with him and are anxious to come to his resc He suggests to them that an *autopsy* be held with the co sent of the friends of the deceased and that *they* shou conduct the same and that *they* can either find clots blood in the heart and assign that as an evidence of valvul disease of that organ, or find the lungs diseased or a co gested condition of the brain, the arteries contracted and evidence of *embolism* and announces the *one* or the *other* of these as the cause of the death. Yet, who does not know that even a dead ox will have clots of blood in the heart, and that even alcohol much more so ether or chloroform, will produce a congested condition of the brain, contract the arteries and cause evidence of embolism.

But if a death occurs in a dental chair during the administration of an anæsthetic and operation, it is difficult create the impression that the natnre of the operation was such that the patient might have died any hour, that the disease was of such a severe nature that the patient died from the effects of the surgery. Then again—and it is to be regretted—his brother dentists don't feel the necessity of coming to his rescue. In fact, many of them would rather see him suffer as that might slightly increase their practice and yearly income. And the physicians too often say he had *no business* to give the anæsthetic. He should have called in a physician. No autopsy is held, and the dentist, no matter how much better qualified he may be to administer an anæsthetic than the physician, is left alone to bear the burden of the *unfortunate* occurrence. No man, either in the dental or medical profession, who has been an observer of these incidents but that knows that I am relating the facts. The curse of this *wide-spread impression* not only lays at the door of the medical profession but also, with the dental profession, and the time has come when this fatal *error must* be corrected and the *odium wiped* from the garments of the dental profession. In order to *verify* these statements I may be pardoned for an allusion to personal observations, experience and knowledge of both the medical and dental professions as to their qualifications respectively to the successful use of anæsthetics and the so-called anæsthetics. During the past two years, I have had the pleasure of talking to thousands in both professions at the medical and dental colleges and societies, upon the science of anæsthesia and anæsthetics, and have given over fifteen hundred

clinics in the use of " Hayes' Process of, and Apparatus fo
Generating and Applying Anæsthetics," etc., which ha
afforded an opportunity of acquiring a knowledge of th
attainments, experience and qualifications of men in bot
the professions as pertaining to the science, and use
anæsthetics. While I have found many in both profession
who have extensively read and studied the science and hav
had a great deal of experience in the use of pain obtundin
agencies; yet, I have ascertained that there is no oth
science pertaining to the healing art, that is so little unde
stood as the science of anæsthesia, and (I regret to sa
especially in the medical profession. Though there a
only about 20,000 dentists in the United States to 100,0
physicians yet, the dental profession have occasion
administer anæsthetics about ten times to the medical pr
fession once, and as a consequence the dentists are *press*
into the service and become more deeply interested. The
are *forced* to read up and study the science of anæsthes
and the effects of the agencies employed. While ve
many of the physicians administer on an average scarce
once a month or once a year and some not at all. Tru
many of the surgeons in the hospitals and colleges and
few outside, have quite an extensive experience in the u
of anæsthetics; but many of these even have given ve
little attention to *cause* and *effect* or the *fundamental* princ
ples of the science. Others by the careful study of *cau*
and *effect*, and skill in diagnosing conditions and causes
conditions, have become quite successful in the productio
of anæsthesia, but these are *exceptions* to the general run
the medical practitioners. On the other hand, it is *qui*
different with men in the dental profession. You cann
find a dentist but that has occasion to use anæsthetic
There is a very *great demand* and he must supply th
demand or lose a portion of his legitimate practice. Ther
fore, he eagerly casts about for the *best*, *safest* and mo
convenient agency to produce insensibility to pain, Th
accounts in part at least for the dentists having discovere

and brought into use nearly all the pain obtunding agencies that are in use at the present time. Yet, in the face of these facts listen to the *preposterous* declaration of Dr. Reeve: "Certainly anæsthetics are administered for general surgical purposes hundreds of times for once in dental practice, and if so then the relative number of deaths under tooth-drawing is enormously large." Is there another physician in all this *enlightened* land that could be induced to make a similar declaration? To put the most charitable construction upon this *wild dogmatic assertion*, it must be presumed that the doctor's acquaintance with the relative duties of both the professions must be very limited indeed.

Again, in proof that "anæsthetics are more dangerous in dental practice than in surgery" he refers to the statistic reports of the relative causes of deaths as pertains to the nature of the operations from the use of chloroform in anæsthesia, as given by Dr. Sansom and by the Committee of the Royal Medico-Chirurgical Society. But even this the Doctor fails to report accurately. Instead of eight cases of death when teeth were either removed or to be removed out of 107 deaths of all surgical operations, he gives eight cases of death out of 100 as reported by Dr. Sansom, and instead of twelve cases of death from anæsthesia while teeth were extracted out of 109 deaths from all surgical operations, he gives twelve cases of death out of 107 as given by the Committee of R. M. S., yet, these reports instead of *substantiating* the Doctor's extravagant statement only *condemn* the same. It will be borne in mind that the reports only give a certain number of administrations out of which so many deaths occurred. It is certainly a very low estimate to place the half of those administrations for the painless extraction of teeth which should give the half of the mortality in either report, but instead of half the mortality, we have about one tenth laid at the door of the dental profession and nine-tenths at the door of the medical profession. Therefore, from these or any other reports, it is *not true* that more deaths have occurred in the dental chair, than at the hands of the general surgeons. But it true, that when a death does occur in the dental chai instead of a *post-mortem* examination and an effort to cov up the real cause of the death, as is the case usually whe the death occurs at the hands of the general surgeon; tl coroner is called in to investigate the cause and testimon of so-called experts, usually from the medical profession, heard from the *witness stand,* who are there not in *defen* of the dentist as they from their standpoint usually hav some misgivings and distrust toward the dentist as l *might have called* them in to do this work; but they a there summoned by the coroner to assist him in pointir out the real cause of the death and they *seldom fail* to p it where it belongs. Then the report is published in all tl local and distant secular papers and the medical and dent journals pick it up from these with their constructions ar comments. But how different when a death occurs general surgery. The *autopsy,* the medical society, tl medical and dental journals, all favor the *unfortunate* phy ician. Usually it is quieted and does not reach the journa frequently does not even get into the local medical societ Thus thousands of deaths, no doubt, caused from the *mi erable* manner of *preparing* and administering anæsthetic have never been reported and do not appear in the mortali reports from the use of anæsthetics. Now, I subm whether this is justice alike to both professions and wheth it is not *high time* that a *new leaf* be turned and that tl dental profession shall demand the same protection fro society and the respective professions as is accorded to tl medical profession. The dentist of to-day is not a gu smith, a blacksmith, or a barber, but has the honor of b longing to the *most progressive profession* of the age. H education and experience in special surgery and knowledg of the science of anæsthesia and experience in the use anæsthetics entitle him to equal rank with the M. D., equ honor and protection from society and the *laws* of our cou try. In fact many physicians recognize the worth of the de tist's qualifications in the administration of anæsthetics and in *critical cases* prefer the assistance of their dentist in the use of anæsthetics to that of the medical practitioner notwithstanding the earnest protests of our noted surgeon of Dayton. In still further proof of these facts, may I be permitted to state that during the past ten years in the line of my duties with " Hayes Process of, and Apparatus for Generating and Applying Anæsthetics," I have administered chiefly for the extraction of teeth to nearly 9000 persons, without causing a death, or producing paralysis of the functions of life, or *asphyxia*, and with but a *very few cases* of nausea. Moreover, from the many who are now using this process, apparatus, etc., (mostly dentists) it would be a low estimate to put the number of administrations by dentists at 60,000, without having a single death during the administration or operation. I refer to the number of administrations without causing a death not only to *verify these* statements but to disprove another *absurd* statement which, however, the Doctor is not alone in making, namely, that in consequence of "the particular nerve involved in the dental operation, the acute pain caused by injuries to it and the powerful effect of sudden impressions upon its branches, upon the great and vital processes of respiration and circulation, by sudden impressions upon this nerve more than any other is that inhibition of the heart's action brought about, which is sudden death." And that as "anæsthesia for tooth-drawing is likely to be incomplete and will pretty certainly be so, if the operator is also the administrator," and that a "state of partial anæsthesia is therefore one of special danger and especially so if the pain produced is at once sudden and sharp," and that "such reflex actions are increased under chloroform."

Now, I admit that the anæsthesia is not usually as profound, *nor should it be*, for the removal of teeth as for most other surgical operations, and for this reason: that if the patient loses the power to control the muscles pertaining to the oral cavity, and a tooth or a root should happen to slip from the forceps, which will occur sometimes in the hands of the most skillful, it is liable to enter the œsophagus or larynx and cause trouble. But, if the patient be allowed to control these muscles though he may be unconscious and insensible to pain, he will exclude the tooth. But, I deny *most emphatically* that the reflex actions are increased under partial chloroform narcosis. This is *most certainly* one of the most misleading fallacies taught. Does chloroform or any other narcotic make sensation more acute? Is it not a fundamental law of anæsthesia that sensation diminishes as narcosis increases? And that the diminution of sensation does not *increase* vasco-motor activity, but on the contrary has a tendency to retard? The inhibition of the heart's action can only be brought about by the suspension of the circulation of *nervo-vital fluid*, or animo-electricity in the inhibitory nerve, as that is the motive power of the heart's action. This suspension can only be produced by concussion and revultion, the result of which is the *cessation* of the functions of life. This concussion or sudden arrestation of nerve circulation, may be produced by a sudden action of the intellect as by fright or the sudden breaking of very sad news, or it may be produced by an external agent such as the sudden introduction of an over volume of electricity or by sudden production of very severe pain, or a sudden introduction of an over percentage of a powerful narcotic. But, if sensation diminishes as narcosis increases, there certainly will be *less severe* and *less sudden* pain in partial anæsthesia than in case of no anæsthesia. In other words, there must be less liability to concussion or shock in partial narcosis than when chloroform has not been given at all. This is *inevitable*, and forcibly demonstrates the *fallacy* of the theory advanced by such theorists. Therefore, partial anæsthesia by the use of ærated chloroform, ærated ether or any other suitable narcotic preparation, does not *enhance* the dangers to life from the operation, but on the contrary diminishes the dangers. However, if the administrator of the anæsthetic neglects to describe its sensations in the periphery, in the fingers, hands, knees and body, the patient may mistake these for the approach of death and be so frightened as to produce *concussion*, or sudden *arrestation* of the circulation of animo-electricity or nervo-vital fluid in the inhibitory nerve and death may be the result. But the result is not due to the partial narcosis but mainly to the neglect of the administrator and more directly to the fright. Yet in complete or profound anæsthesia the patient passes through the very *same experience* and therefore partial anæsthesia cannot be more dangerous from that cause than *profound* anæsthesia and there must be less danger from the operation with partial narcosis than without any narcosis.

Again, we have only to call attention to Dr. Reeve's own language to show that he does not understand or know what he is talking about. He says: " Far more important than all, however, is the fact that the *induction* of *anæsthesia* for tooth-drawing is likely to be incomplete." Does the Doctor not know that the word anæsthesia represents condition? *Anæsthetics* are *inducted* to produce the condition known as Anæsthesia. This is not a *lapsus lingua* or slip of the pen, but a deliberate statement from an assumed educator of the dental profession. Other statements *equally intelligent* may receive attention in a future article, as well as the paper to which the Doctor refers in his *caution* against the use of ether by the dental profession.

ARTICLE II.

CERTAIN POINTS CONNECTED WITH THE STRUCTURE OF DENTINE.

BY F. J. BENNETT, M. R. C. S., L. D. S., ENG.

In one of the numerous and interesting contributions to molecular physics in March, 1885, Dr. W. M. Ord stated that it was possible to etch the surface of pieces of ivor and mother-of-pearl by immersion in a solution of subcarbonate of potash in glycerine. A year previously he (M Bennett) had attempted to extend some of the well-know experiments of Rainey on the formation and disintegratio of calculi with a view to obtaining artificial absorption an deposition in teeth and bones. Dr. Ord's paper cam therefore, as a welcome addition to his knowledge on th subject. He made various experiments in order to appl this method to the dental tissues, first using subcarbonat of potash in glycerine, and bicarbonate of soda, also i glycerine. At the same time, in order further to check thi action, specimens were placed in pure glycerine alone. T his surprise, in both cases such similarity resulted that h was led to the conclusion that the real active agent in th decomposition must be glycerine alone, and since then h had used it exclusively.

His method of procedure was: (1) To grind and polis freshly extracted teeth sufficiently thin for microscopica purposes, then suspend them in pure glycerine, or over on of the compounds mentioned, for periods of from one t six months or longer, then wash and mount in glycerin for examination. (2) Freshly extracted teeth were immersed whole in pure glycerine for similar periods, the ground, polished and mounted as before. (3) Whole teet were placed in very dilute solutions of glycerine, th strength of which was daily increased until pure glycerin was used, the specimens being kept in this for one or tw months.

Examination with the naked eye showed that wit pure glycerine alone there was neither obvious loss o tissue nor rigidity, the chief feature being the increase translucency of the dentine. On examining one of th sections with a low power under the microscope, take from a young tooth, longitudinal to and including the pul cavity, but without the pulp tissue, no conspicuous chang was observable excepting in the dentine bordering on the pulp cavity, which presented a fringed and slightly laminated appearance. Under a higher power this appearance proved to be due to the loss of the intertubular tissue, leaving the dentinal tubes clearly defined; but this removal had not entirely freed the tubes. Their course appeared interrupted at regular intervals by layers of membrane having a parallel direction to the surface of the pulp, the layers bearing a general resemblance to that seen in interglobular dentine. Circular apertures, however, not solid globules, occupied the surface of the membrane; oval spaces were also found between the layers of the membrane. Through these apertures dentinal tubes could be seen crossing from one layer of membrane to another, and completely freed of their intertubular substance; the tubes seemed to arise from the upper and under surface of the membrane, and in places arose distinctly as processes from the margins of the membrane, in such a manner as strongly to resemble irregular cells and processes. A characteristic feature, moreover, was the regularity with which the tubes were measured off in short lengths by the crossing of the membrane. The specimens varied, not so much as to the time they had been immersed before mounting, but as to the time they had been mounted; for if a drop of glycerine were added beneath the cover glass from time to time, the specimen continued to be acted upon indefinitely. In this way fresh layers of membrane and additional lengths of tube could be brought into view. He was of opinion, however, that in other respects specimens were best examined early, many seeming contradictory and anomalous appearances, in his judgment, being due to specimens being mounted too long or allowed to come in contact with air.

Having become familiar with the various appearances assumed by the membranous layers as seen in profile, he selected a specimen presenting to view a continuous and fairly flat surface of the young layer of dentine parallel to the pulp, taken from the inferior fang of a lower molar. In the centre, the dentinal tubes were seen directly cut

across; as the sides were approached they became gra
ly more oblique. Besides the appearance of layer suc
ing layer, before described, over large areas scattered
appeared to have taken the place of the membrane.
cells, seen in every variety of position, were genera
an elongated stellate shape. They were best seen
the dentinal tubes were oblique in direction; from
point to where the tubes were cut directly across, a cu
and at first puzzling, appearance was presented. Th
form distribution of the dentinal tubes seemed brok
little gaps, as though they had been pushed aside.
careful examination, he concluded that these apparent
were cells similar in nature to those seen at the ma
and other parts of the specimens, where they presente
more familiar aspect of stellate cells.

In connection with the appearances of membra
the region of the pulp cavities, he might remind them
long ago it was pointed out by Salter and others th
interior of the cap of forming dentine on examinatio
vealed an appearance of structure similar in its relatio
interglobular layers of dentine. This he regarded as s
confirmatory evidence of the effect of glycerine being
destructive in its action, since it revealed appearanc
exactly resembling the natural ones. From the ap
ances which the specimens presented, it was manifes
the glycerine had acted in a selective manner, rem
certain portions of the tissue only.

Various explanations might be given of the ap
ances described. First, it might be assumed that the
branes merely represented a part of the matrix itself,
possessed a greater power of resisting the action o
glycerine than the rest. It might further be assume
the surface of the membrane itself presented unequal s
of calcification, so that portions of it had become rem
leaving behind the circular apertures. If this were t
might fairly accord with the theory of globular calcific
in dentine. This explanation might be even strengt

by the fact that the effect of submitting interglobular dentine to the action of glycerine is to bring out exclusively and clearly the membranes which surround the globules. Further, it might be considered that the glycerine had produced separation of the layers of the matrix through the unequal expansion or contraction of certain parts. Upon this point, however, Dr. Lionel Beale had spoken very positively; he said that all tissues, both hard and soft, neither shrink nor swell in the strongest glycerine, if only the glycerine were first diluted and then gradually increased in strength. In order, however, to test the expansion of a substance almost identical in nature with the animal basis of dentine, he (Mr. Bennett) immersed a strip of gelatine in glycerine for some weeks, and a strip of gelatine was also immersed in water. At the end of the period, that in glycerine had not expanded or altered in measurement, while that in water had become softened and swollen in all directions. A third assumption would be to regard the appearances as evidence of cell structure.

Proceeding to describe the dentine in calcified pulps of old teeth, where much variety occurred, the author of the paper said, not only did the effects of glycerine show themselves well in those situations, but from the fact that it was impossible to preserve, in ground and polished specimens, both the dentine and parts of the semi calcified pulp, he was yet able to obtain specimens showing cell structure and mounted directly in Canada balsam, which served well as a standard of comparison by which to judge of the distorting effects, if any, of glycerine. The result of these comparisons was greatly in favor of the glycerine, which brought out the structures with greater clearness and removed the calcified portions, bringing into view the parts which underlie them. The appearances of specimens in which the dental pulp was also present he would leave to be described on another occasion, likewise the consideration of the appearances of enamel under glycerine, in order that he might add a word as to the effects of this reagent on the cementum.

This tissue, as was natural from its containing t smallest proportion of lime salts of any of the hard stru ures of the teeth, was the most completely affected glycerine, so thoroughly, indeed, that almost every tra of it could be removed by absorption. The absorptio however, was usually most visible in specimens which h been ground and mounted for sometime.

Briefly to summarise the results of his investigatio first, it had established the fact that glycerine was capal under certain conditions of decomposing the hard tissu of the teeth, and that it probably did so by the removal the intercellular substance or matrix, where it existed in certain state of density; thus, in the cementum, the le dense of the three tissues, it was most active, the ce being loosely united were unable to hold together, a disappeared with the surrounding decalcification; in t dentine, a tissue which there was reason to believe creased in density in the order of its deposition, the youn er layers were chiefly affected. He need hardly point o in conclusion, that beyond furnishing a new and valual re-agent wherewith to study the tissues and furnish fre data from which to reconsider certain points in the stru ture of dentine and cementum, there was that other asp in which glycerine, from the manner of its absorption the tissues artificially, might lead a step onwards to a bet understanding of complex and hidden methods employ by nature herself.

Dr. ORD: I rise, sir, in obedience to your reque and first let me congratulate Mr. Bennett upon the abil and suggestiveness of his paper. In the beginning he luded to some papers of my own as bearing, from his po of view, upon his researches—which I may say I think him great credit;—they are scattered papers and cover good deal of ground. I hardly know Sir, how far I m trespass upon the time of the Society, but I will not very prolix. It happened two or three years ago that Su geon-Major Bidie, now Sanitary Commissioner of Madr wrote a letter to *Nature* to say that he had observed that certain glass vessels upon which white ants' mud had been deposited became etched over that portion which had been so covered, and he asked if any acid was to be found in ants' secretions capable of acting on glass. It was known to me, from very long association with Mr. George Rainey that he had observed that glass surfaces were eroded when exposed to the action of carbonate of lime deposited in the presense of colloids. He had shown that a perfectly clean and perfectly smooth glass slide, after being placed for a time in a solution of gum with carbonate of lime, became perfectly dim, and was eaten out into little shallow round depressions. When carbonate of lime was deposited in gum it was seen taking, instead of the form of a rhombohedron, which it should take, a spherical form, and he demonstrated that the colloid annulling the polarities of crystallization allowed simple attraction to work unhindered, so that, where there should have been a crystal with plane surfaces and sharp edges, we got a sphere: where a colloid was formed on the surface of the glass it drew away molecule by molecule from the glass into itself forming a little bed in the shape of a slight hemispherical depression. I repeated Mr. Rainey's experiments, using gum, albumen, and glycerine together, and I obtained, after some length of time, specimens much more remarkable than Mr. Rainey's (simply owing to larger exposure) in the presence of a colloid and a perfectly neutral salt. It occured to me to try ivory and mother o'-pearl in a parallel series. I used, with regard to glass, glycerine and nascent carbonate of lime; but when I was dealing with carbonate of soda and glycerine in connection with ivory and mother-o'-pearl, although I used in some experiments no carbonate of lime, I still got marked etching. That, of course, raised a question of a different aspect, and I may say that these were not acted upon by carbonate of potash or carbonate of soda without glycerine. What I believe, then, to be the explanation is that whereas in the glass the etching had come

about by "molecular coalescence," I thought we ha
the evidence of "molecular disintegration." Let m
plain these terms. Mr. Rainey, when he found sphe
carbonate of lime in gum, found that any two or
spheres coming into contact with one another coal
gradually into one perfect sphere; this he called "
cular coalescence." When such spheres—really
pearls—were placed in a fresh solution of gum, the
derwent dissolution, the earthy matter being drawn
them, leaving only a ghostly sphere of the organic m
This Mr. Rainey called "molecular disintegration."
contact of the glycerine and carbonate of potash wit
surface of the ivory or mother-o'-pearl introduced
colloid, and it would in like way disturb the or
arrangement, draw out the earthy matter, and leav
matrix behind. This is the way in which I have expl
the appearances. Mr. Bennett, in his experiments
eliminated the carbonates and dealt only with glyc
It is very interesting to notice that in proportion a
structure was less compact he has more readily draw
the earthy material from its organic matrix, and wher
organic matrix is more completely formed and more
pletely solid, he has left the organic structure wel
served, almost as if he had dissolved the earthy matter
an acid.

As to the cells, I will not express an opinion, e
that I think these are re-arrangements of the earthy m
However, he seems to have hit upon something which
be of great value in such researches as he is purs
He seems able from solid teeth to withdraw the inor
without disturbing the organic matter. This, at
seems to be the explanation of his interesting resul
should not like to say more until the specimens have
examined by polarized light to see whether they be o
ic spheroids or inorganic matter. While thanking yo
your kind attention, I must express my gratitude to
Bennett for putting us on a new line of observation.

Mr. F. J. **Bennett**: May I be allowed, sir, to break through the rules, and reply to Dr. Ord at once? as I believe he has to attend another meeting. There is no doubt in my own mind that the appearances of structure exhibited are not due to re-arrangement of the matrix. There is undoubted proof that it really represents a natural structure which we had not hitherto known to exist. We have similar examples in interglobular spaces, and there are other instances. Salter says if the inside cap of young forming dentine be examined, it will be found to possess a cellular appearance, very much that of interglobular dentine, and the appearances in my specimens are very similar. With reference to polarized light, I have submitted my specimens to it and there is no doubt, after analysing them, that they are calcified structures. I think that those who wish to thoroughly follow up Dr. Ord's investigations will do well to read his own works; they are very interesting, and form a sort of second chapter to the leading works on this subject.—*Transactions of Odontological Society.—London Dental Record.*

ARTICLE III.

COCAINE IN SURGERY.

BY DR. FREIDRICH HAENEL.

[Abstract of a Lecture Delivered in the Society for Natural and Medical Science of Dresden, April 14, 1888.]

Cocaine is sufficiently appreciated and applied, not only by specialists, but also by practical physicians, on account of its local anæsthetizing action on the conjunctiva and the cornea of the eye and on the mucous membranes of the nose, of the oral cavity, of larynx, then of the male and female urogenital apparatus. But this is not the case in the same degree with regard to the application of the remedy to the anæsthetization of the epidermis. Yet, it i just to the practical physician who is often in a position t perform small surgical operations without competent assistance, cocaine offers such inestimable advantages that i may not seem superfluous to point out parenchymatou injections of cocaine solution for the anæsthetization o circumscribed portions of the epidermis and of deeper layers of tissue.

The idea of using this medicament, which had prove an excellent anæsthetic for mucous membranes, in the sam way for local anæsthetization of the epidermis, was not very remote one, and, indeed, almost simultaneously, experiments in this respect have been instituted and published from different sides.

In Germany it was *Landerer*, who first, in Centralblat fur Chirurgie, 1885, No. 48, called attention to local anæsthetization by means of subcutaneous injections of cocain and related the successful results obtained. He used a per cent. solution, injecting from two to three lines of Pravas syringe, equal to 0.008—0.12 cocaine, and after a interval of five minutes he was able to perform small operations, without the patients giving expression to any pain Some time later, *Wolfler's* paper was published, in whic *Landerer's* favorable results were confirmed, the only difference being that Wolfler had employed somewhat large doses, as high as 0.05 cocaine. A short time before thi the method had been successfully employed in Nort America, and from there, from Corning, the advice wa given, in all cases where it was feasible, to combine it wit artificial vacuity of blood, causing in this way a longe duration of cocaine action. In France, *Verchere* had use already the subcutaneous application of cocaine, and *Rusconi* in Milan had obtained anæsthesis, sufficient for painless performance of incisions, by daubing the untouche skin with cocaine solution.

These first essays were soon followed by numerou others, which, although differing considerably in thei statements about concentration and quantity of the fluid to be injected, were unanimous on the excellence and suitableness of the method.

After a previous failure, I have applied it, during the last six months, in about 80–100 cases (half of which concerned extraction of teeth), mostly in polyclinic practice, and with very satisfactory result.

The proceeding is a very simple one, after thorough disinfection of the whole field of operation, the epidermis; in the direction of the incision to be made, is subjected to one or more injections, inserting the canule of the common Pravas syringe obliquely into the skin, not introducing it under the skin, and then pushing it ahead a little space, so as to control the largest possible field with one single insertion. It is desired to anæsthetize deeper portions, the same place of insertion allows the addition of an injection into the subcutaneous tissue, or even deeper. I mostly use a 5 per cent solution, which is more reliable than weaker solutions; yet even with 3 per cent. solutions, I have had favorable results. On account of the easy decomposition of the solutions and their liability to mould, it is to be recommended never to keep on hand large quantities of the solution and always to add a few drops of carbolic acid. I have endeavored to succeed with the smallest possible doses, and the largest quantity of cocaine, which I ever used, was 0.025, or one-half syringe of a 5 per cent. solution. This was a case in which the operation, under vacuity of blood, lasted one hour. Ordinarily, I did not exceed from two to three lines of the syringe for one injection.

The cocainized field, which is characterized by immediate anæmia and in a short time spreads out somewhat, has the size of a Pfenning to a Mark, according to the quantity of the liquid used. Anæsthesis sets in rapidly and is complete after five to ten minutes, continues, when connected with artificial vacuity of blood for an hour and more, with free circulation of blood for 15 to 25 minutes or even less, always according to the quantity of the solution injected.

The cases in which cocaine anæsthesis was applied, were: incisions of furuncles; phlegmonic abscesses, fissures of fistular channels, extirpations of small tumors, extraction and excision of extraneous bodies, amputations and exarticulations of fingers and toes, operations of grown-in nails, extraction of teeth.

Application of cocaine mostly prevented pain completely, sometimes there was some pain, but of a decidedly less degree, and in a very few instances only, it would entirely give way. In these cases, however, there was mostly some technical defect to be noticed. Thus, in opening a phlegmatic abscess through the very thin epidermis, the injection had manifestly been pushed too far down into the abscess itself.

For extraction of teeth, I use cocaine in the following way: I practice an injection of 0.005 gr. cocaine on each side of the tooth between gum and alveola, and then, after about 5 minutes, I apply the forceps. If the patient at this moment still experiences some pain, I wait for a while. In a great number of cases, the effect was complete, *i. e.*, the patients did not experience any pain at all. In other cases of about the same number, a partial result only was to be noticed. Application and raising of the forceps was not felt in a painful manner, while the extraction itself was painful, although in a mitigated degree. In a small number of cases, in about six, cocaine had no result at all.

There are a great many very favorable reports on other operations performed under cocaine anæsthesis, even larger operations, such as operations of phimosis, division of fistula of the rectum, herniotomy, tarcheotomy in adults, extirpation of tuberculous lymphatic glands of the neck, uranoplastic and staphylorrhaphic, radical operation of hydrocele, laparatomy, gastrotomy, mammillary amputations of the upper and of the lower part of the thigh, etc.

However, for operations on the bone, cocaine is not sufficient. Patients who supported incisions in fleshy parts without manifestation of pain, will, according to my exper-ences, feel strong pains in manipulations of the periosteum nd of the bones.

For this reason and then on account of the necessity f employing, in these extensive operations, two large oses of cocaine, which in many cases have given rise to larming toxicological phenomena, cocaine is not suitable or larger operations, or at least very exceptionally only, n cases for instance, where chloroform should be counter-ndicated. Nor is the psychical element to be overlooked. he patient, who sees and hears the proceedings of the peration, becomes easily excited, especially in a serious nd protracted operation, and in such cases humanity alone ill cause chloroform to be preferred. Besides this, the otility of the patient will often interfere, and in operations, equiring a relaxation of the muscular system, total narosis will always be preferable. For the above reasons it s obvious that cocaine anæsthesis is not applicable in surical operations of children, or at least in a very limited easure.

Concerning the dangerous feature of cocaine, slight ases of intoxication—I only refer to acute intoxication, hronic intoxication not coming into account in this mode f application of cocaine—are not rare, and even observaions on serious, alarming phenomena are extant, as these eported by Mayerhausen, Bock, Schilling, Heymann, annheim, Robson, Kilham, Comanos Bey. A prominent nstance is the well-known case of death caused by injecion into the rectum of 1.2 cocaine, having driven the hysician, Kolomnin in St. Petersburg, to commit suicide. nother fatal case is said to have occured in Warsaw in ental practice.

Slighter intoxications, the symptoms consisting in palor, cold sweat, vertigo, heaviness and fatigue in the legs, ensation of anxiety, increased frequency of pulse, have een observed by me twice after application of 0.008 and .01 cocaine. In one of these cases when nitrate of amyl as employed as an antidote, as frequently recommended, it rendered very good service in this quality.

I had an opportunity of observing a severe case of toxication towards the end of February of the current ye A dentist, according to his statement, had injected und the gums of a 19-year-old girl of strong constitution, though slightly chlorotic, 0.11 cocaine, ¾ syringe of a per cent. solution in two portions, which was followed the painless extraction of the carious tooth. The patie then became pale, fell backward and the whole body w seized with convulsions of great violence.

These epileptiform convulsions continued for 5 ho with short interruptions, and during this time the pati was entirely unconscious, giving no sign of reaction to a excitation. The pupils were moderately wide and witho reaction. The pulse, not to be counted in the beginni subsequently showed a frequency of 176; the frequen of respiration was 44. After the convulsion had ceas the patient lay quiet, unconscious. When awaking, s was unable to walk; she was only able to sit in a squatti position; she could not raise the arm; she had an inte aversion for light, diminished sensibility of the skin, mucous membranes, the nose and the oral cavity, compl loss of smell and taste, dryness and burning in the thro thirst; then appeared, at first less conspicuously, but creasing to excessive height in the next days, a conditi of pronounced casdialgia; to this was to be added ret tion of urine during twenty-four hours, complete lack appetite during four days. While the other phenome disappeared after two to three days it took forty ho before she could walk with trembling knees—cardial continued for six days. There were no permanent con quences to be noted. Nitrite of amyl had no visible eff in this case.

Severe cases of intoxication of this kind will nec sarily lead to an understanding on the maximum do which should be allowed. *Landerer* has proposed 0.0 as maximum doses. *Decker* (Munchoner med. Woch schrift 1887, No. 39) 0.02. Possibly, somewhat larger quantities, as high as 0.03, may be given without inconvenience, provided the limit of what is allowed, especially in consideration of the individually different sensibility for cocaine, is not reached in decrepid persons, in patients with severe affections of the heart, and in persons reduced by pains, loss of blood and exhausting suppuration.

Slight phenomena of intoxication, for which nitrate of amyl is an excellent antidote of prompt action, are scarcely to be avoided and may well be submitted to in consideration of the great advantages presented by cocaine, and of the long consequential phenomena often induced by chloroform narcosis, not to mention chloroform collapse and chloroform death.—*Korrespondeuzblatt d arztl K. u. B. Vereine im Konigreich Scichsen.*

ARTICLE IV.

ELECTRICITY IN DENTISTRY.

As an instance of the rapid march of science, and its adaption to the varying needs of mankind, one would perhaps, be inclined to place electricity in the very foremost rank; not only on account of the tremendous strides which it has of late taken as an abstract science, but more particularly in view of the fact that to it we owe so many of the material comforts which we are privileged to enjoy in these modern days, when Nature's secrets are being ferreted out at a rate which would fairly have puzzled our more easy-going fore-fathers. Science has always ministered to the wants of man—to the alleviation of his sufferings, and to the amelioration of his condition. It has done much, in conjunction with art, for our own specialty; and it is, therefore, but reasonable that, in reviewing the large field of usefulness which electricity now covers, we should en-

quire as to any special benefits which it is capable
ferring upon dentistry, and seize upon them, in the in
both of ourselves and our patients.

One of the most formidable enemies of the
(especially if he be located in London) is light—or
the absence of it—during a large portion of his w
hours. To attempt delicate work in a bad light is t
failure, to experience disappointment, and to trea
borderland where loss of self-control merges into d
The electric light is doing much to lessen the glo
our cities, and is eminently adapted to dental requir
from its peculiar advantages of brilliancy of illumi
absence of noxious products, and the definition of da
hues of color. To those within reach of having this
ful lighting power "laid on," there can be no excuse
availing themselves of the boon—except it be that
pense. We understand, however, that the current
suitable for purposes other than lighting; but, surely
an obstacle to be overcome in the future. To thos
attempt anything beyond the casual use of a tiny ora
driven from a primary battery, disappointment
sooner or later; and hosts of batteries, "guaranteed"
the most marvelous work, have come and gone, like
tres of ill-fame. We are aware that a great amount
and trouble in certain instances have yielded fair
but if domestic lighting on a practical scale had bee
ible from primary batteries, we should have seen th
general use long ere this. The hope of the present a
to cling to secondary batteries or accumulators, b
storage necessary for lighting on anything like an ad
scale must prove a stumbling-block to the general
tion of this system.

In the direction of motors and mallets, things a
tainly more promising, for a large section of our y
operators have utilized primary batteries for these pu
for some years with a fair amount of success. It too
time to familiarize the public with the dental engine,

s not impossible even to-day to lay one's hands on both ractitioners and patients, who are strongly prejudiced gainst its use. In like manner, it will take some time to vercome the prejudice which exists against the employient of motors, but in future we have no doubt that they vill become very general, and will be appreciated as lessning the dentist's exertions, while performing their work vith greater effect, and less discomfort to the patient. Vater-power has its advocates for this purpose: but, whilst illy admitting its many advantages, yet we cannot ignore ie fact that the general use of electricity for motor puroses in the future must also appeal to us, as being dequate, and economical. Meanwhile, we are casting bout for suitable electrical motor power, and the principle f *storage* seems to be coming to the front. Should this iethod prove, after reasonable trial, to fulfil our requireients, the way will have been prepared for the more genral utilization of dental motors.

If opinions differ as to the way in which we should rive our engines, the same is doubly true as to the iethods of introducing gold; and even those who employ illets are sharply divided as to the particular form of low which should be given. The advocates of the electric iallet are, we believe, on the increase; and, although it will robably never become a universal idol, yet we venture to rophesy, that it will hold its own in years to come as a eliable adjunct to cohesive gold filling. Although the orm of the mallet needs much improvement, yet we are iore concerned at the present moment with a suitable ower for working it. All those who have had any experence of primary batteries know something of the chagrin aused by failure of power in the middle of a large filling, xcept reserve cells be requisitioned to help one over the tile. Our remarks on motors will also apply to mallets, nd a reliable power will be hailed with much pleasure, not nly as a solution of much that is perplexing, but also as a iedium of making more popular an instrument which deerves the attention of every student of dentistry.—*Ex.*

ARTICLE V.

PIVOT TEETH, CROWNS, &C.

BY W. ST. GEORGE ELLIOTT, M. D., D. D. S.

[Extracts from Lectures at National Dental College on Opera
Dental Surgery.]

Pivot teeth have probably been used to a limited
for several hundred years. We are certain that they
known over a century ago, as Woofendale has left
record as far back as 1783. At the same time, they
have been seldom met with up to a comparatively
date. Attention has only been called prominently
matter within the last twenty-five years.

Human teeth were solely relied upon in the da
terior to the introduction of porcelain teeth, and are
sionally to be met with in our own time. There is
temptation to use them, on account of their natural ap
ance, but the decay which so generally sets in, added
disagreeable odor that they produce, has properly ba
them for ever.

The earliest form of pivot, or pin, was that of
This material, while for many years extensively us
now only occasionally met with, it having been replac
the more desirable metal substitutes. When wood i
ferred, compressed second-growth hickory is found
the best, and the pin used should be one-eighth of a
in diameter and half-an-inch long. The old-fashioned
crowns in America were shaped like the natural tooth
the gum, and had a hole in the axis which, howeve
not pass through, as in tube teeth. The wooden pi
forced into the crown, and fitted while dry into th
prepared in the root; reliance was placed upon the
ure to swell the wood, and thus make the tooth firm.

In some mouths wooden pivots have proved urable, but in the majority they are of little value. I re- iember seeing a case while practicing in Callao (Peru) in 'hich the wooden pin had been in place for fifteen years nd was still perfectly serviceable.

Soon after wooden pivots came into general use atten- on was given to metal substitutes, as well as to a combi- ation of the two—a wire centre in a wooden pivot (White, 861)—and from that time down to the present the different inds of pins, screws, tubes, caps, &c., that have come be- ore us is something remarkable; probably not less than ne hundred and fifty have been published. I cannot, owever, go into all the varied forms, even if I had accessi- le data to draw from, but will merely outline some of the nore prominent, mainly for the purpose of preventing their eing re-invented and again offered to the profession as omething new and valuable.

I shall try to classify and arrange some of the many orms; but many absolutely refuse to fall into line, and nust be described separately:

Wood pin or pivot in nerve canal, with and without ement packing. (Woofendale, 1783; Willard, 1852; Muse, 853; McQuillen, 1863.)

Wood pin in tube forced into canal, with and without ement. (Old Practice, 1876.)

Wood pin in tube, screwed into root.

Vulcanite pin, with and without tube and packing.

Vulcanite pin with wire centre. (Richardson, 1862.)

Metallic pin soldered to plate tooth and forced into oot, with or without cement. (Van Marten, 1874; Flagg, 865.)

Metallic pin vulcanized to vulcanite tooth forced into oot, with or without cement. (Richardson, 1862.)

Metallic pin cemented in root, and projecting into and emented to crown. (Bonwill, 1880.)

Metallic pin, split or otherwise, fitted to tube in root, in fastened to crown. (Balkill, 1875.)

Metallic pin soldered to cyl. cap, cemented into root. (Buttner, 1883.)

Metallic screw in nerve canal, with and wit
ment, with nut on projecting portion. (Bonwill, 1

Metallic screw of silver, screwed into gold-fill
crown attached to same by Wood's metal. (Latime

Metallic screw in tube, tube tapped inside o
both. (Richmond, 1879.)

Metallic screw in canal, with or without ceme

Metallic screw through crown into wood
(Foster, 1879.)

Metallic screw through vulcanite, backing
(Register, 1875.)

Metallic screw in wood in root, split and pro
wood wedge and ferrule and pivot crown. (Wetherb

CROWNS:

All gold, swedged, with cross bar, cement
(Morrison, 1869; Beers, 1873.)

All gold, low cap to stump, screws through i
gold crown fitted over. (Talbot, 1880.)

All gold, low cap to stump, swedged cusps, s
tween filled with melted gold. (Rollo Knapp, 188

All gold, struck up from sheet metal, witho
(Reiner, 1885.)

PORCELAIN-FACED CROWNS:

Cap to stump, plate tooth contoured with
mented pin in root. (Richmond, 1879.)

Cap to root, sheet metal sides, centre filled
melted gold. (Rollo Knapp, 1886.)

Hollow crown, with porcelain front let into sa
held by cement, &c.

All-gold crowns were introduced to the profe
Dr. Morrison, of St. Louis, about 1869, but they
generally known, or, where known, not fully appr
until within the last ten years. They are, in my
one of the most valuable means at our disposal for
ing broken-down and otherwise unserviceable mol
ful.

Briefly, they are hollow crowns made of No. 20-carat gold, and shaped like the original tooth. They may be made in a number of ways, but I prefer the following: The root is prepared by cleaning and stopping the canals in a thorough manner, for which purpose I use liquid and solid gutta perchas. If the walls are sufficiently thick, undercuts are made in them to anchor the cement filling; if they are not strong, pins are fitted into the canals, either at a sitting in advance of the final completion, or at the same time. The standing walls, if any, are cut away sufficiently, so that they do not interfere with the fitting of the crown or with its articulation. An impression is now taken of the tooth in gutta percha, and the bite in Stent, and a model cast in Spence metal. Upon this model the band is fitted and soldered. When this is done, a suitable cap is selected, fitted into the band with wax, and the whole tried in the mouth, and both band and cap fitted, the one to the gum, the other to the antagonizing molar. The whole is then removed, invested in plaster and sand, and soldered with 18 carat solder.

A staple of gold wire, or other suitable mechanical means of anchorage, is now soldered in the inside of the cap, which, after polishing, is ready to be placed in the mouth.

The cavity and tooth having been thoroughly dried by means of Japanese paper and the hot-air syringe, and the pins placed in the canals, the cavity and the crown are filled with oxyphosphate cement, the crown placed in position and bitten upon to see that the articulation is correct. The cement in excess is found squeezed out beside the gum; this is removed, the parts kept dry for a few minutes, and the operation is complete.

There are several advantages in this mode of procedure. It takes less time and is much easier to the operator and the patient than if the band were fitted entirely in the mouth. It is vastly simpler and much less expensive than the Rollo Knapp process, which is as follows—

The tooth is cut down almost to the gum, on this
is fitted not unlike the lid to a bandbox: this is a d
operation and takes much time. Upon this cap is
wax tooth; this is artistically carved and properly
lated; it is then removed from the mouth. An impr
of the top of this wax tooth is taken in pumice ston
glycerine, and into this is poured zinc. With a di
made and a block of lead the cap or cusps are stru
from thin sheet gold. The cusps, after trimming, are
upon the wax model and the sides are covered in by
gold, leaving an opening. The sheet metal conne
gold cap or cusps with the shallow cap intended to
the root.

The tooth is now invested in plaster and marble
except the side uncovered, and when dry it is heated
the Knapp blow-pipe, which, having a small and p
flame, melts the bits of gold and solder that are put
hole, the melted metal taking the place of the wax.

The blow-pipe referred to uses nitrous oxide
pressure, as in the ordinary fluid form, together wit
mon illuminating gas. The resulting flame is sma
pointed, and is quite efficient for the purpose sp
The consumption of nitrous oxide is about a quart
minutes, a gallon thus lasting twenty-four minutes, d
ing, of course, on the size of flame; this cannot be co
ed expensive; and yet those who can obtain Bine's o
as we have it in London, are much better off, as the
2½d. a foot as against 8d., or less than one-third
advantage in the nitrous oxide is that it is always
found in every village. But it is quite unnecessary
ploy any special apparatus as a blow-pipe; merely a
tube to the illuminating gas, and another to your
oxide bottle, and connect the two at a common
blow-pipe. I have thus used them for a year w
trouble.

In the latter process about double the gold is re
and more than double the time, as five hours are co

ed by Dr. Knapp as necessary, while the former method—which is not the invention of any one person—takes but two hours. We are indebted to Dr. Starr for the means referred to of rapidly swedging the caps, in excellent imitation of the natural cusps, &c.

It is desirable, although not a necessity, that the sides of the hollow crown just described should be rounded or contoured. This is done after the band has been soldered together. The central portion of the band is, by the aid of the contouring pliers, bulged, or rounded outwards, so that a horizontal line drawn through the centre of the tooth is longer in the centre than at the cervicle edge.

For many reasons it is considered an advantage to have the edges of the crown fit snugly around the neck of the tooth, but I have never found any gum irritation resulting from even a poorly adapted crown. The edge should press lightly against the gum all round, but not sufficiently to cause discomfort to the patient.

PIVOT TEETH.

Pivot teeth, as ordinarily understood, mean all porcelain crowns as applied to the front teeth; the general word crown is, however, displacing the older pivot. While lecturing on the subject last year, you may remember, I described some seventy modes of attachment. In the earlier part of this lecture I attempted to classify them, mainly by the character of the attachment. As they are only of interest from a historical point of view, we will not again refer to them, except to the few whose claim upon us cannot be summarily dismissed. The first special crown largely introduced since the days of the wood pin is the Bonwill, 1878; this is not the screw and nut crown of the same prolific inventor, but a materially different one. It consists of a porcelain crown with conical hollow interior, connecting with a small hole in lingual aspect. The root is filled with

amalgam, a stout pin forced into it, the crown filled
same way and forced over the projecting pin in
When hard this tooth is generally very suitable, bu
often detached before the amalgam has sufficient ti
harden, much to the discomfort of all concerned.

Personally I prefer the earlier screw and nut.
this I have met with much success. My plan of proc
is as follows. The root is disinfected and coned out i
cess of the requirements of the pin; it is then unc
with a wheel bur and thoroughly dried with hot ai
cavity is then filled with oxyphosphate, and while still
soft, the crown with its screw and nut in position, is
duced and moved into proper articulation. At a subse
sitting, if there is no hurry, I take off the crown by r
ing the nut, remove the oxyphosphates from the cr
undercut and fill with amalgam, refit the crown an
some amalgam over the nut, or what is better, put
second nut over the first—this generally prevents the
ening and falling off of the nut, which is the weak po
this mode of attachment.

Perhaps the easiest and the most satisfactory fo
pivot is that where the pin has been baked into the bo
the tooth, as in the one form of Richmond, the L
Brown, &c. The cavity is fully coned out and und
and filled with oxyphosphate, and the crown introd
As the crown covers the cement, and largely prote
from the action of the saliva, fair durability may be exp
of it.

The manifest objection to this and all other sp
forms is the necessity of an enormous number to n
from. Depots do not care to carry a large stock, and
chances of matching are poor, one must have recour
some other plan. It is for this reason I generally mak
own pivots, using a plate tooth backed and contoured
gold and pin attached, or plate tooth backed and conto
with gold, with a hole in centre for the screw and n
Dental Record.

ARTICLE VI.

A NEW ALUMINUM PROCESS.

Messrs. Brin Brothers, the inventors of the industrial process of separating the oxygen from the nitrogen of the atmosphere, recently showed some experiments in connection with a new process of making aluminum alloys, at their laboratory, 9 College Street, Belvedere Road, London. An ordinary but rich clay was mixed with a reducing agent called by them "a flux," and made into a paste with water. Some pig iron which had been run into bars three-eighths inch thick and two inches broad was broken into pieces. These pieces were charged with the paste and alternate layers of coke into a small cupola. A further quantity of coke to fill the furnace was put upon the top of the charge, and the blast from a fan turned on. In about twenty-five minutes the pig iron had melted. According to the inventors, nascent aluminum is produced in contact with the molten iron, and penetrates the same, the effect of the conbination being to reduce the melting point of both metals and to yield a more fluid product than either of them separately. The contents of the furnace were then discharged into a ladle, and castings were made of the "aluminum steel," containing about 1.75 per cent. of aluminum. The nature of the flux was not revealed, as Messrs. Brin have not yet completed all their patents, but the inventors state that its cost is not higher than that of the clay used. The castings were exceedingly sonorous, for when suspended by a string and struck with a piece of metal the vibrations lasted from thirty to forty-five seconds. The castings were of white fracture, and free from blow holes. The silicon and some other impurities of cast-iron are thrown out in the form of slag. The aluminum has thus a twofold function in this process. It forms definite alloy with the iron, and aids in clearing out its impurities.

In another experiment the ready manner in whic aluminum can be reduced by the process was illustrate A piece of thin, soft scrap iron was coated with the cla and flux, and inserted in a blow-pipe flame. At a brigh yellow heat the clay was reduced, and metallic aluminu became occluded in the whole thickness of the iron, givin the latter a white surface. The resulting metal, instead being soft and pliable, became tough and springy, and was claimed had acquired all the properties of first-clas steel. Some of the alloy thus made was put into stron pure nitric acid, and was not acted upon thereby; while piece of the original scrap iron was rapidly attacked und the same circumstances. The proportion of aluminum i the steel produced depends, within certain limits, upon th proportions employed of the original ingredients for char ing the furnace. Alloys of copper and of some oth metals can be formed in the same way. Some copper a uminum bronze was exhibited; also such a bronze alloye with from 17 to 20 per cent. of steel. This alloy can made hard, and with a fracture like fine cast steel; or careful annealing and repeated rolling a fibrous texture ca be produced. Mr. Frederick Varley, who has made exper ments with Messrs. Brin's aluminum steel, states that it h all the properties of the best iron for conducting magnetis while chilled castings will make excellent permanent ma nets. He suggests the use of the bronze containing per cent. of aluminum as telephone and telegraph condu tors, believing that the bi-metallic character of the allo will be found to be a corrective of self-induction. T principle of producing alloys by applying aluminous vap in its nascent state is found to work with a long range metals besides iron, and makes an exceedingly fine alun inum silver alloy, possessing valuable properties.—*T Dental Record.*

ST. LOUIS DENTAL SOCIETY.

ST. LOUIS, MO., January 5th, 1889.

The Annual Meeting of this society was held at the office of Dr. A. J. Prosser, 3109 Olive Street, Wednesday Evening, January 2d, and the following officers were elected for 1889:

President—Dr. A. J. Prosser.

Vice-President—Dr. J. Warren Wick.

Recording Secretary—Dr. Jesse E. Grosheider.

Corresponding Secretary—William Conrad.

Treasurer—Dr Henry Fisher.

Publication Committee—Drs. H. H. Keith, John G. Harper, and J. B. Vernon.

Committee on Ethics and Elections—Drs. J. B. Newby, Wm. N. Morrison, and A. H. Fuller.

There were seventeen meetings held, and fourteen papers presented during 1888.

WM. CONRAD,
321 N. Grand Avenue. *Corresponding Secretary.*

Editorial, Etc.

THE UNIVERSITY OF MARYLAND DENTAL DEPARTMENT AND THE SECRETARY OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.—

At the request of Dr. Fred. A. Levy, Sec'y. "National Association of Dental Examiners," we publish the following letter in answer to one from the Dean of the Md. Univ. Dental Department, dated Nov. 1st, 1888, and which appeared in the Oct. No. of this JOURNAL:

ORANGE, N. J., November 5th, 1888.

Ferdinand J. S. Gorgas, M. D., D. D. S., Dean, Baltimore, Md.

Dear Sir.—Yours of November 1st, enclosing Circulars

containing correspondence with Drs. Waters, Wrig
Wardlaw, received, and in reply I would state:

1st. That I have no record of the attendance
Wardlaw and it appears from his own statement that
not present at the Session at which was passed the Res
complained of by you.

2nd. Dr. Wright is in error relative to the proce
of the National Association of Dental Examiners w
states that your College passed without objection or co
of any kind. In this important particular: that the
opposition to the insertion of the name of your
among those whose diplomas to the National Associa
Dental Examiners recommended the various State Bo
accept instead of an examination, or it would not hav
dropped from the revised list presented by the Com
for particulars of the passage of this resolution I refer
page 4 of the printed proceedings of the Associatio
which it appears that the list of Colleges presented and
ed at the last meeting was re-considered. The list wa
referred back to the Committee to be revised, and wa
presented to the Association; was amended, and a
omitting the name of your College.

3rd. That this *report* of the committee, appoint
that purpose, consisting of Drs. Wright, Rawls and
was *signed* by each of them, and in that form, presen
the Association; this *original* report, omitting the n
your College, and signed by Dr. Wright with the other
tioned, I have in my possession, which you can se
application.

4th. At the time of the passage of this resoluti
appears upon page 4 of the proceedings mentione
roll-call showed ten States represented.

5th. The printed report of the proceedings of the
ciation sent you are correct in every particular, the as
of Dr. Wardlaw (who was not present), and those
Wright (who concurred in the resolution dropping yo
lege), to the contrary notwithstanding. As you will s
conclusions which you arrive at, from what you cho
term the testimony in your possession, are totally in

nasmuch as the name of your College was intentionally omitted from the list of the Dental Colleges which the National Association recommended the various State Boards, whose diplomas might be accepted, instead of an examination.

There has been no confusion upon my part in the matter; upon the contrary, I have been exceedingly particular, and know that there has been no mistake whatever.

Any other or further information you may desire I shall be pleased to furnish you.

Very truly yours,
FRED. A. LEVY,
Secretary.

In answer to the above letter of Dr. Levy and especially the portion of it relating to the action of Dr. G. F. S. Wright, President of the South Carolina State Board of Dental Examiners, we refer to a letter of Dr. Wright's dated Nov. 15th, 1888, which was published in the November No. of this JOURNAL, and which we again present to our readers:

" GEORGETOWN, S. C., Nov. 15th, 1888.

Professor F. J. S. Gorgas, Dean of Dental Department University of Maryland :

Dear Doctor.—The Committee of which Dr. Levy writes, whose report he says I signed, held no meeting when I was present, and the final action was as I stated.

The roll was called, and as the Secretary called the name of an institution, the Presiding Officer, Dr. Waters, would ask if there was any objection, and if there was nothing said he would announce: "*No objection.*" I kept a score of the roll, and no one objected to the University of Maryland Dental Department. I have written this to Dr. Waters, who has written to me and stated his impression of the action. Dr. Levy says the proceedings will be published in the *Ind.* I am not in possession of any information except rumors from the Association of Dental Faculties; of these the impression made was not unfavorable to the School of which you are the Dean.

That the Dental Department of the University of Maryland was objected to is a mistake, it was not. No school in

Baltimore was, but a Washington School did have ob made and was turned down.

I am very respectfully,

G. F. S. WRIGHT, D. D.

President of S. C. State Dental Examining Boar

It therefore becomes a question of veracity betwe two gentlemen, Drs. Wright and Levy. Dr. W. C. W of the Georgia State Board of Dental Examiners, supp Wright's statement so far as the following declaration

"I, with Dr. S. B. Barfield, of Macon, Ga., repr the Georgia Examining Board in the Louisville meeti my recollection is clear upon this matter. For having whisperings that objections might be made against yo lege, I, at considerable inconvenience, attended the Se The National Board of Dental Examiners, at which th Colleges was reviewed, prepared to fight the questi was consequently upon the *qui vive*. The roll had be over at a previous meeting, and in being reviewed fo tion at this session, was gone through with two or thre and each time there were errors to be corrected, so th not surprised if the mistake (unintentional) does actua in the Secretary's record. But a mistake it certainl feel sure that Dr. Barfield and others will substantiat this.

There was one subsequent session of the Board o Examiners at which I was not present, but at which I w nothing had been done but the election of officers, and business.

I voluntarily write this, so that if the records of S Levy are wrong, your college may still be set right."

Assuming that Dr. Levy's statement and minut proceedings of Louisville meeting are correct, we cont the action of the "National Board of Dental Exami the Louisville meeting, in omitting the name of the U of Maryland Dental Department, was contrary to a resolution of said association which recommends to Boards to confer with a college whose diplomas are qu before publishing it as derelict, to the end that no may be done, particularly to those who have honestly earned their diplomas from such institution.

The spirit and the letter of this resolution is set at nought if the president and the secretary of said Association are correct in their reports of what took place in regard to the University of Maryland Dental Department, and Dr. Gorgas in his letter to Dr. Waters very justly asks:

"Have there ever been any charges brought against our Dental Department for failure to comply with any of the requirements of the State Boards of Dental Examiners, or of the American and Southern Dental Associations? I have never heard of any, and defy any one to prove that we have not strictly complied with all such requirements.

Does not the fact that no less than three of the five members composing the Maryland Board of Dental Examiners have recommended students to our Dental Department for the present session, prove that the majority of the members of the Maryland Board of Dental Examiners, are satisfied with our course of instruction and recommend it?"

Again. Article III of the Constitution of the National Association of Dental Examiners reads:

"MEMBERS.—This Association shall consist of such different State Boards of Dental Examiners as may elect to join this National Association. They may be represented either by a delegate or delegates duly authorized, or by the whole Board. Certificates from the proper officers of the Board will be necessary to entitle such Board to representation in this body"

Dr. Waters was not duly authorized to represent the Maryland State Board of Dental Examiners at the Louisville meeting. He could not therefore and in point of fact did not present a "certificate from the proper officers" and every member of the Maryland Board of Dental Examiners, except Dr. Waters, has said individually that Dr. Waters was not an accredited representative of the Maryland Dental Examiners to Louisville. When the president of the board went to the meeting at Niagara in 1884 and when the secretary went to the meeting at New Orleans in 1885, they were duly commissioned under seal and money appropriated to meet their expenses (in part).

The interests involved and the gravity of the sit made it necessary to present the correspondence whi pears in this JOURNAL.

The remark of a delegate at a meeting of the N Association of Dental Examiners, that "he was glad the quarrel between the Baltimore colleges" illustra "true inwardness" of the effort to depreciate and os the University of Maryland Dental Department, alt in the suitably expressive parlance of Dr. Waters that " is not the only one left out in the cold."

The President of the Maryland State Board of Examiners, Dr. E. P. Keech, and the secretary, Dr Field, have both recently stated that they would not di nate between graduates of the University of Maryland Department and those of other dental schools.

The Maryland Dental Law originally denied reco to diplomas granted in other States, but amendment adopted which placed it in harmony with other denta Formerly a person who held a diploma from a universi college of Maryland authorized to grant diplomas in surgery could require his name to be registered; n board has discretionary power to pass upon the qualifi of any one who desires to begin the practice of dent Maryland. Although the dental law of 1884 fully pr the University of Maryland Dental Department in thi from false friends or open enemies yet its dean in o assist in removing the restrictive feature of the law favo amendments referred to and wrote: "I heartily app them and desire to see the bill passed by the Legislatu

As an evidence of the desire of the Faculty of t versity of Maryland Dental Department to adhere str the recommendations of the State Boards of Dental Ex the American Dental Association, &c., reference can b to the fact that during the session of 1885 86, no le seventeen applicants for admission to the senior or gra class were refused on the ground that five or more yea tice were not equivalent to one session's attendance; a was at least one year before the other dental schools the same course.

We also desire to state that Dr. Levy's letter would have
ppeared in the preceding No. of this JOURNAL, but for the
ason that the original was sent South to parties whose verac-
y it questioned; and as soon as a copy was sent to us by Dr.
evy, it was at once placed in the printer's hands for the pres-
nt No. of JOURNAL. There was no desire on our part to sup-
ess the letter as Dr. Levy intimates in his article in the
Vestern Dental Journal.

ALUMINIUM IN THE ARTS AND MANUFACTURES.—Alum-
ium is destined to become before long of great importance
skilled art work and in manufactures, both in its pure state
nd as an alloy with other metals. It is as our readers
ossibly know, a product of clay, and it is estimated that in
very cubic yard of clay there are at least eight hundred
ounds of aluminium. But the process of extracting it is so
ostly that the pure metal can only be used in the manufacture
f philosophical and other instruments where lightness is
esired. It is in demand for theodolites, levels, compasses,
extants, for beams for chemical balances, opera and field
lasses, certain kinds of surgical instruments, fine wire lace,
uture wire, dental plates, &c. The demand is now about
o be met by the manufacture of pure aluminium on a large
cale by the aluminium company which has built works near
Birmingham, England, for reducing the aluminium from the
ouble chloride of aluminum and sodium at the rate of five
undred pounds of aluminium per day. As the production of
he entire world has not heretofore exceeded fifty pounds per
lay, the new company can manufacture in five or six weeks
s much as was formerly produced in a year, and it has
educed the selling price by cheapening the production of the
netallic sodium from eleven dollars to five dollars per pound.
But it is as an alloy in strengthening other metals that an ex-
ensive demand for the impure aluminium obtained by Cow-
es's electric process is springing up. Two works are now
using this process. One of them is at Lockport, New York;
he other at Milton, England, and both are reported to be
unning day and night. It is the extraordinary properties of
he aluminium alloys which are rapidly bringing them not only

into notice, but into use. Aluminium bronze is the stro
of cast metals, and when rolled the strongest of rolled m
Aluminium brass is noted for its great strength, its
elastic limit and its cheapness. This cheapness arises
the fact that it contains an extremely small percenta
aluminium. There is hardly any metal with which it w
alloy, and it alloys with nothing that it does not improve
most remarkable peculiarity is the strength-giving prop
small quantity of it imparts to all metals into which it ent
an alloy. Aluminium bronze is expected to play an imp
part in future wars, and also as an alloy for wrought and
steel guns, while repeated tests are said to show that one
of one per cent. added to cast iron not only strengthe
casting, but solidfies it by preventing blow holes. V
metals have been used in the manufacture of propellers.
iron has been found too weak: steel is liable to corrod
average life of a steel blade being only four years. In
ing the new steamships the government at first decided
manganese bronze for the blades, at a cost of five hu
and sixty dollars per ton, but on its attention being dra
aluminium brass a number of comparative tests were di
to be made, which resulted as follows:

	Mang. Bronze.	*Al. Brass:*
Tensile strength per square inch, tons.	29–31	34–50
Transverse strength per square inch, cwts.	28–52	75–85

The aluminium brass, costing about five hundred d
per ton, was found to be of so much greater tensile and
verse strength that the government countermanded the
for manganese bronze and adopted aluminium brass
stead.

HYPNOTISM AT BERLIN.—At a late meeting of the
Medical Society, Prof. Virchow introduced a French phys
Dr. Feldmann, who made some experiments in hypn
A young man named Garrick offered himself as a me
After a few seconds of the usual manipulations the mediu
into a deep magnetic sleep. He became perfectly apa
and motionless. In the state of "suggestion," Dr. Feld

showed the influence of various medicaments on the medium, who took quinine for sugar, smacking his lips with enjoyment, and he believed ammonia to be perfume, and smelt at it for some time. Immediately afterward, following the will of the doctor, he showed the usual signs of abhorrence of those bitter and caustic substances. With the same success he ate a lemon for an apple. A piece of camphor held on his forehead had a singular effect. The medium bent his body far backward, and had to be held on his chair. A magnet caused a dreamy state, during which the medium related his impressions as to events in the streets in which he believed himself to be. Then the medium obeyed the will of the doctor in various ways, shoveling snow, skating, falling, and rising again with one jump at the doctor's suggestion and finally took a pocket-book by force out of Prof. Virchow's pockets. He was then ordered by Dr. Feldman to reseat himself, and soon woke out of the hypnotic sleep, remembering nothing of what had happened. Two young physicians then spoke, declaring that such experiments were without scientific basis. They believed the 'suggestion" to be probably genuine, but as to the other experiments, especially the effect of medicines and the magnet, they thought they needed careful examination.

BITING THE FINGER NAILS.—" A novel incident resulting from a habit of very common prevalence among nervous people was brought to my notice recently," said a leading physician of Philadeiphia, the other day. " A young lady presented herself at my office and complained of a constant irritation in her throat. Two weeks previously she had been taken with a very severe attack of sore throat, which was treated by the family physician. Under his care, she said, the inflammation quickly subsided, but there still remained a sensation of irritation. Examination revealed a small. fleshy looking object the size of a kernel of wheat adherent to the tissues posterior to the left tonsil by the one end. The other parts of the throat were normal. The little mass could not be detached by a cotton-covered probe, but by the use of forceps it was easily removed, and, on examination, proved to be a piece of finger nail which had becone imbedded in a cheesy deposit. A broken piece of the nail was also removed from under the mucous membrane at the same spot by a sharp pointed probe. The lady then confessed to the habit of biting her finger nails, and moreover could remember that a day or two previous to her throat trouble a piece of nail she had bitten off had become lost in her mouth, but, after it had caused a fit of coughing, she had forgotten all about it until reminded by the discovery."

Monthly Summary

DEATH BY ELECTRICITY: THE NEW METHOD ECUTING CRIMINALS.—The law requiring electrical exe of death-sentences will go into effect on January 1st experiments on dogs made last summer by Harold P. an electrical engineer, were criticised because the we the animals killed was less than that of a man, and it w posed that more current would be required to kill a being on that account. On Wednesday afternoon Mr. had an opportunity to make a demonstration before bridge T. Gerry, the author of the new law, and the c tee appointed by the Medico-legal Society to report best means of putting the law into effect. It was sou find out the amount and character of current that wo required to make death certain and instantaneous. periments were made in Mr. Edison's laboratory in The first victim was a calf weighing 124½ pounds. T was cut on the forehead and on the spine behind the f and sponge-covered plates, moistened with a solution phate of zinc, were fastened in place. The resistanc animal was 3.200 ohms. An alternating current of 7 was applied for thirty seconds. The animal, howeve killed instantly. It was at once dissected by Drs. Ingr Bleyer, but the brain, heart, and lungs, were found to normal condition, and the meat was pronounced fit f One metal plate carrying the current touched the hai forehead and slightly burned it, but otherwise there external indications of injury. A second calf weigh pounds and had a resistance of 1,300 ohms. The alternating current at 700-volts pressure was applied seconds, and produced instant death. To settle perm the weight-question, a horse weighing 1.230 pounds w killed by passing the alternating current at 700 volts fr foreleg to the other. The resistance of this animal was ohms. Mr. Brown was assisted by Mr. A. E. Kennell there were present Mr. Thomas A. Edison, Professor den Doremus, Professor Charles A. Doremus, Dr Fr Peterson, Dr. Frank H. Ingram, Mr. Elbridge T. Ger Galvin, Dr. J. M. Bleyer, H. Bourgouon, and Mr. Joh ray Mitchell. The experiments are said to have pro alternating current to be the most deadly force kn science.—*Medical Record.*

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Continuous Gum Work will be Demonstrated by DR. J. W. MOFFITT.

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lward Maynard	D. C	Dr. James G. Palmer	N. J
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J. Volck	Md	" W. W. Allport	Ills
muel J. Cockerille	D. C	" J. B. Patrick	S. C
S. Chisolm	Ala	" W. W. Evans	D. C
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illiam Farmer	Va	" George B. Steel	Va
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thur M. Rice	Conn	" Wm. B. Wise	Va
D. Carpenter	Ga	" S. Dwight Hodge	Vt
M. Cowardin	Va	" C. P. Baird	Tenn

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stated times during the Annual Sessions a number of the Corps of Clinical ctors will hold Clinics and deliver Clinical Lectures.

ch year since its organization has added to the reputation and prosperity of this rsity Dental School, until now its graduates, in almost every part of the civilized are meeting with the success that ability will ever command. The past session e most successful one in number of matriculates ever held; and visiting dentists ll parts of this country have expressed themselves as being astonished and grati- t the ability shown by the students when operating upon patients in the ary. Forming one of the departments of one of the oldest Universities in this ry, its diploma is everywhere recognized and honored.

e instruction in both operative and mechanical dentistry is as thorough as it is le to make it, and embraces everything pertaining to dental art. The advantages the general and oral surgical clinics, to which the dental students are admitted, ced to all the lectures of the University, afford, cannot be overestimated. The thousands of patients annually treated in the University Hospital, which is well n to be the largest Hospital in Baltimore, afford an abundance of material for ntal infirmary and laboratory practice, and the oral surgery clinics.

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Lecturer on Dental Mechanism and Met

B. HOLLY SMITH, M. D., D. D. S.
Lecturer on Special Anatomy and Dental Materia

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The Forty-Ninth Annual Session will commence on the 1st of
1888, and continue until March, 1889. The Infirmary is open during th
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Students corresponding with the Dean will please be careful to g
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Porcelain Teeth

Beginning at Vienna, in 1873, where I made my first
I have received successively at the Six World's F
Highest Award for ARTIFICIAL TEETH; *this being t*
important branch of my business and all that I exhibited.

The greatest proof ever extended for Superiority to any
facturer of ***PORCELAIN TEETH,*** *for their Strength, Ad*
and Natural Life-like Appearance, was received by me thre
Report of the Judges; Centennial International Exhibition 1

EXTRACT

FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XX

"H. D. Justi EXHIBITED NOTHING BUT TEETH, but his disp
beautiful in the extreme. In color, translucency and texture, they
that could be desired; they were a faithful reproduction of the phy
characteristics of the natural organs, both to the individual teeth and
to the entire set. Their conformation with reference to close and ex
tation to the maxillary arch showed careful study of the needs of bot
and operator. Their various and numerous deviations from uniformit
and outline, simulating the irregularities of nature, was so perfect th
in the mouth no suspicion of their artificial nature would be entertaine
disposition of tooth-material was so skillfully managed as to secure the
amount of strength with the least bulk; and the insertion of platin
was so arranged as to render their displacement an almost impossible a

H. D. JUSTI,

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SIX WORLD'S FAIR MEDALS

OF THE

HIGHEST ORDER OF MERIT

AWARDED FOR SUPERIORITY

—AT—

VIENNA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,

—TO—

H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.

VIENNA, 1873.

CENTENNIAL EXHIBITION,

PHILADELPHIA, 1876.

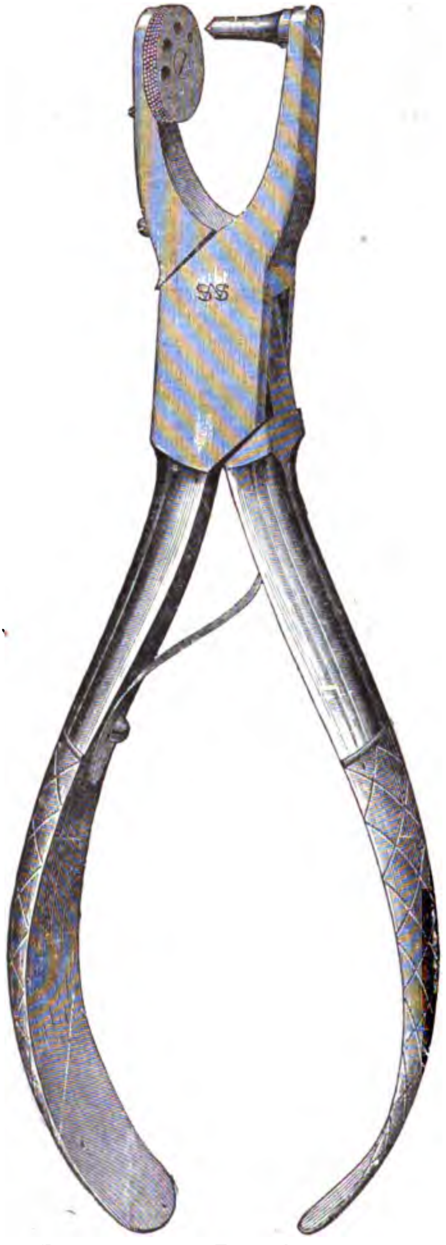
PARIS, 1878.

SYDNEY, 18

OURNE, 188

AINSWORTH'S RUBBER-DAM PUNC

Patented July 1 1879.



In the Ainsworth Punc
coned point cuts the
against a perforated die
four holes of graded siz
the necks of the differe
The perforation is thu
clean and sharp and the
the dam tearing during it
ment reduced to the m
Both the point and the
made of hardened steel,
die is readily rotated to b
desired hole in position.

Made and finished in
of our "Best" forceps and
cutters.

Price, Nickel-plated,

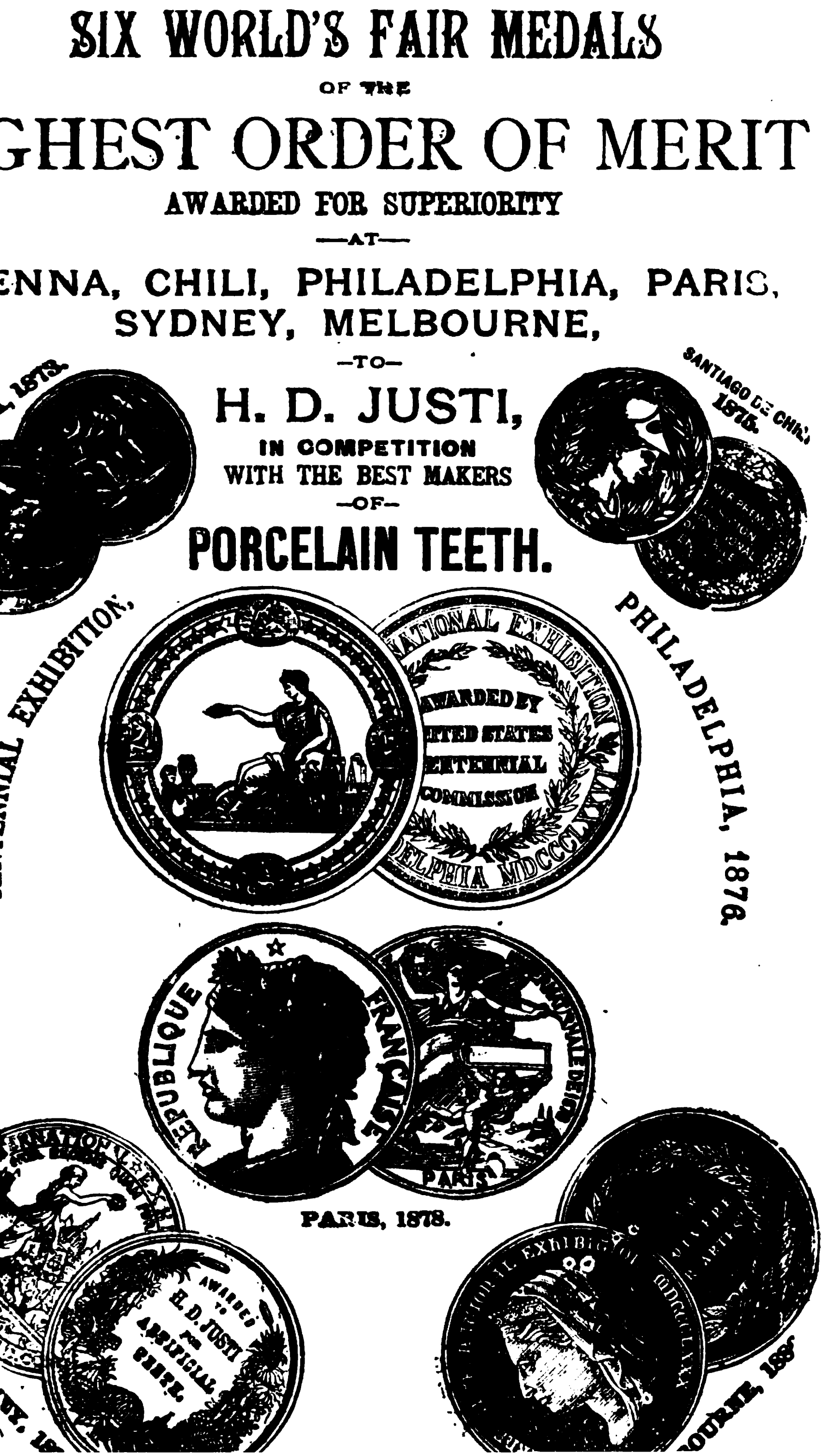
REFLECTO

Patented February 16, 187
Dr F M. Osborn.

These Reflectors are fo
ment to rubber-dam cla
that while providing the
with a strong light, bot
are left free for manip
The left-hand cut sho
method of attachment.
vantage to be derived f
use of these appliances, es
in operations upon poster
ities in molars, will be s
glance. By means of a b
the mirror can be adjusted
centrate the light upon th
or any portion of the m
quired. Two sizes, resp
¼ inch and ⅜ inch in diam
made, which it is believ
meet all requirements.

Price, either size, Plain Glass..................................$
" " " Magnifying Glass.................. ...

THE S. S. WHITE DENTAL MFG. CO
FLPHIA NEW YORK BOSTON CHICAGO BRO



SIX WORLD'S FAIR MEDALS

OF THE

GHEST ORDER OF MERIT

AWARDED FOR SUPERIORITY

—AT—

ENNA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,

—TO—

H. D. JUSTI,

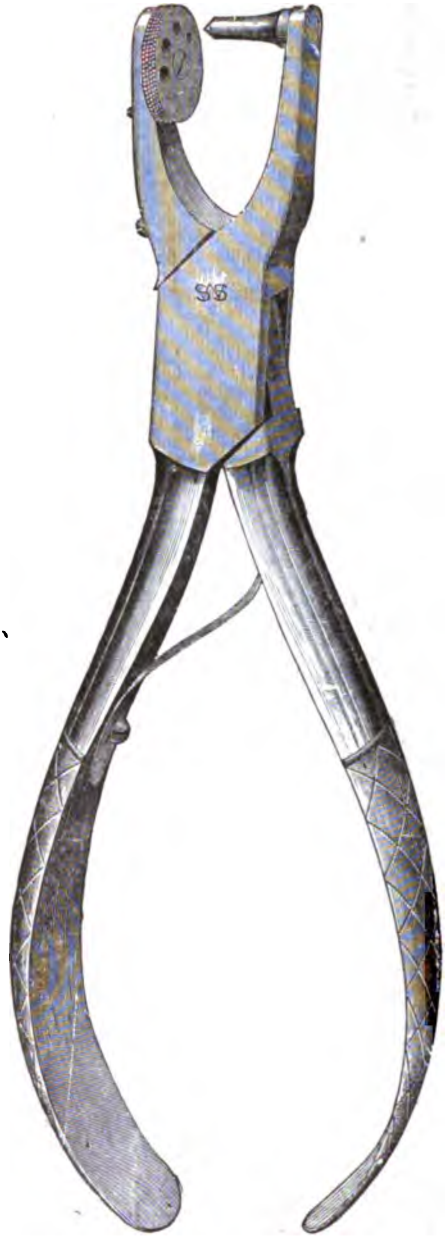
IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.

PARIS, 1878.

AINSWORTH'S RUBBER-DAM PUNCH.

Patented July 1 1879.



In the Ainsworth Punch a solid coned point cuts the rubber against a perforated die having four holes of graded sizes to fit the necks of the different teeth. The perforation is thus made clean and sharp and the risk of the dam tearing during its adjustment reduced to the minimum. Both the point and the die are made of hardened steel, and the die is readily rotated to bring the desired hole in position.

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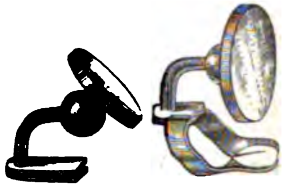
Dr F M. Osborn.



These Reflectors are for attachment to rubber-dam clamps, so that while providing the operator with a strong light, both hands are left free for manipulation. The left-hand cut shows the method of attachment. The advantage to be derived from the use of these appliances, especially in operations upon posterior cavities in molars, will be seen at a glance. By means of a ball-joint the mirror can be adjusted to concentrate the light upon the cavity or any portion of the mouth required. Two sizes, respectively ½ inch and ⅝ inch in diameter, are made, which it is believed will meet all requirements.

Price, either size, Plain Glass.......................................$2.00
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REDUCTIONS IN PRICES
OF
NITROUS OXIDE GAS AND CYLINDERS.

From and after August 1, 1888, until further notice, he prices of our Gas Cylinders will be as follows :

100 gallon Cylinders,	**each**	**$6.00**
500 " ",	**"**	**15.00**

These reductions, with the recent cut in Nitrous xide, will make the prices of Cylinders, filled and efilled, as follows :

Cylinder, with 100 gallons of Gas	**$8.00**
" " 500 " "	**25.00**
Refilling 100-gallon Cylinder	**2.00**
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A PRACTICAL TREATISE
ON
Artificial Crown- and Bridge-Work.

By GEORGE EVANS.

WITH 500 ILLUSTRATIONS.
Octavo. Cloth. 258 pp. Price, $3.00.

The author is well known as an ingenious expert in the field of which his olume treats, and as might be expected the work is eminently practical. But ittle space is given to theorizing upon disputed points, the main object of the riter being to tell, in as few words as will make his meaning clear, the best ethods of procedure in Crown and Bridge-work. To this end he has enlisted he engraver's art wherever a picture would tell the story graphically. The ook is a most profusely illustrated, more than half the figures having been rawn by the author.

Much that is new in practical devices is here presented together with what as been found valuable in the methods published by others in the dental ournals.

To those interested in Crown and Bridge-work (and who among dentists s not?) this volume will be indispensable, as within its covers are to be found lain, practical directions by which, with the exercise of a little ingenuity in daptation, any suitable case can be treated.

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We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5. and

ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, pr pared expressly for the purpose, with great care, by ourselves.

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DR. GENESE'S

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Made from Pure Para Rubber,

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ESTABLISHED 1877.

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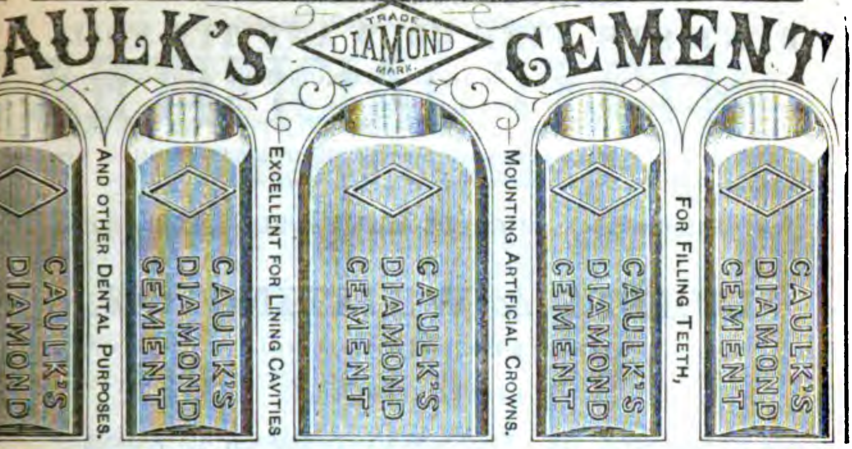

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" " " —Gray and Yellow, - - - - - - 1.50 " "
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This Compound Stands Without a Rival.

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Diamond Point Stopping and Gutta-Percha Points for Filling Roots.

is form of Gutta-Percha having been in the market for several years, has stood test test of all—that of time. The Stopping is put up in sealed envelopes, Pellets, Cylinders and Points in sealed boxes, bearing a fac-smile of our e.

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000 Dentists are using these Materials throughout the World. What better evidence do you wish of their Superiority and Excellence?

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SOFT, TOUGH AND MALLEABLE

CAN BE MADE AS ADHESIVE AS DESIRED BY RE-ANNEALING.

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Having been fully recognized as producing a ***Superior Tooth*** at a very moderate ***price,*** now further avail themselves of this medium through which to call the attention of the Dental Profession to their manufacture. They have now brought the character of their ***moulds*** to a legitimate form in design and construction, and the ***shades*** of their teeth to that variety which affords the Dentist the opportunity of approaching the ***natural enamel.*** A very critical examination is solicited as to price and quality. Send for price-list.

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—KEEP A FULL STOCK OF—

White's and Justi's Teeth,

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$1.00 Teeth.

EVERY LEADING BRAND OF

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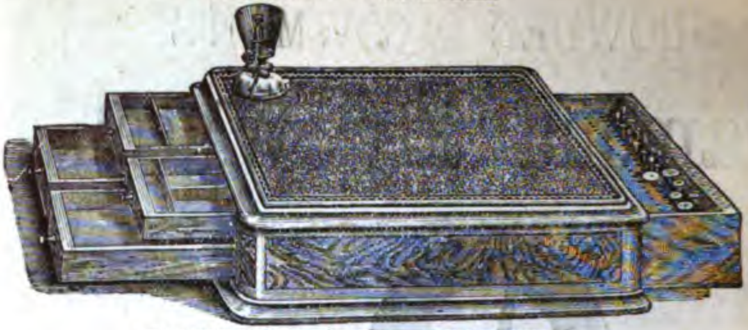
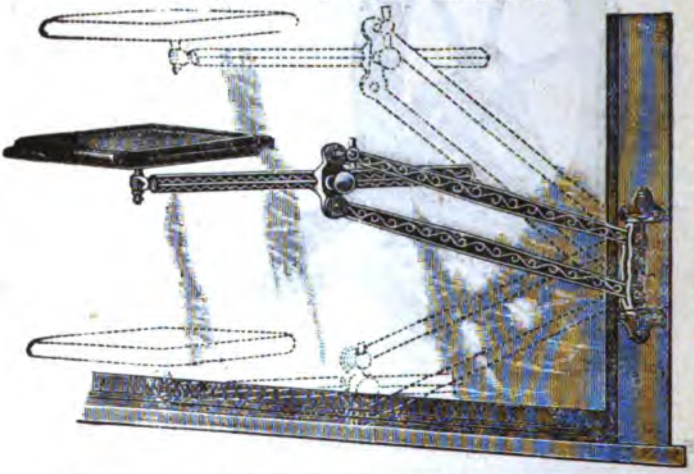


VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES $12.00

STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

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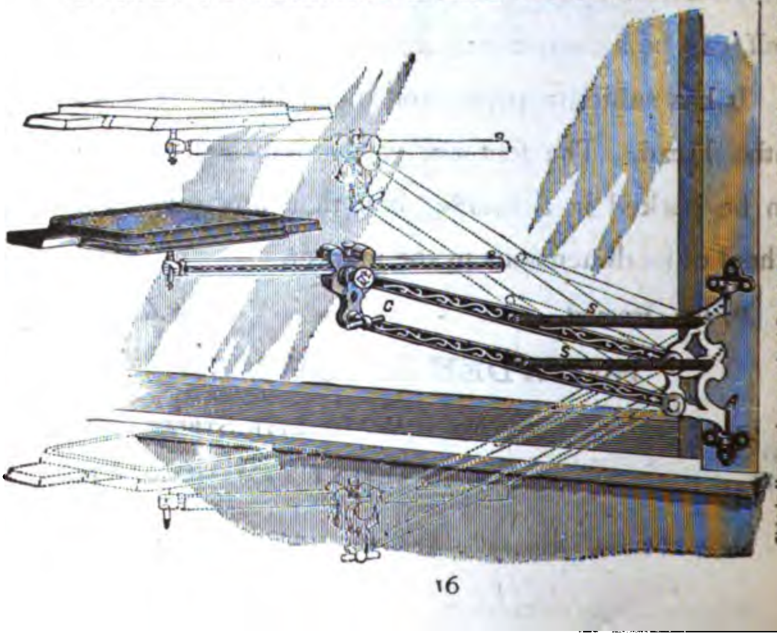

This is the most convenient Bracket made. All metal parts Nickel plated. Bar Slides between four rollers. C, the Clamp, can be regulated for any load. The Allan Table works fine on this Bracket.

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White's and Justi's Teeth,

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We keep on hand a large assortment of Teeth of the followi
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SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAI
RETAIL PRICE.	15 Cts.	10 C
For $15 00 net Cash,	14 "	9½
" 25 00 "	13 "	9
" 50 00 "	12½ "	8½
" 100 00 "	12 "	8

H. D. JUSTI'S.

	GUM.	PLAI
RETAIL PRICE,	15 Cts.	10 C
For $15 00 Cash,	14 "	9½
" 25 00 "	13 "	9
" 50 00 "	12½ "	8½
" 100 00 "	12 "	8

We also keep in Stock a *full* assortment of *Block Teeth* of t
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Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing C

Price per. set of 14,	$ 1
" 11 " "	10
" 29 " "	25
" 60 " "	50
" 92 " "	75
" 125 " "	100

Less than 14 Teeth, 8 cents per Tooth.

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9 WEST FAYETTE STREET, BALTIMOR

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AND DEALERS IN

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R. S. Williams, Cylinders, A,	30.00	15.00	8.00	4.00
" " " B,				
" " Rect. Pellets,				
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Standard Dental Alloy,	6 00
Lawrence's	3.00
Arrington's	2.50
King's,	3.00
Sterling Amalgam,	3.00
Chase's Alcohol-Tight,	3.00
Olivers Amalgam,	3.00
" White Amalgam,	5.00

CEMENTS.

Roman Cement, best in the market,
Agate Cement, in 1 oz. Boxes,
" " " ½ "
Weston's Insoluble Cement, ½ oz.,
Dr. Flagg's Plastic Enamel, per Pk'g,
Fossiline, " "
Metcalf's Cement, " "
H D. Justis's Insoluble Cement,
1 oz. Package, 1, 2, 3, 4 Colors,
½ " " any above "
H D. Justis's Acme Cement,
One oz. Package,
Half " "
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge
" C. N. Pierce Phos. Zinc, " "
" T. O. Oliver's Oxy Phos, " "
" Smith's " Chloride, " "
Houghtons's Os-Artificial, " "
Poulson's Mineral Plombe, " "
Dawsons's Mineral Cement " "
Caulks's Diamond "
Per Package, 2 Colors,
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Caulk's Hydraulic Pebbles, large Pk'ge,

DENTAL RUBBER.

Ram's Horn Rubber,	per
Sam'l S. Whites No. 1 Improved,	
Holdfast Rubber,	
Doherty No. 1,	
" " 2,	
Star Rubber,	
Sam'l S. White's Bow Spring,	
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American Hard Rubber Co's.	per l
Sam'l S. White's	"

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Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
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Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ⅛, ¼ and 1 oz. p'k'gs. Each package warranted as represented.

THE
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Is free from Dirt or Dust.

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Requires no Washing.

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AMALGAMS.

Townsend's	$2.00	per oun
Chicago Refining Co's	4.00	"
Caulk's Par-Excellent Alloy,	3.00	"
Standard Dental Alloy,	6.00	"
Lawrence's	3.00	"
Arrington's	2.50	"
King's,	3.00	"
Sterling Amalgam,	3.00	"
Chase's Alcohol-Tight,	3.00	"
Olivers Amalgam,	3.00	"
" White Amalgam,	5.00	"

CEMENTS.

Roman Cement, best in the market,	$1
Agate Cement, in 1 oz. Boxes,	2.
" " " ½ "	1.
Weston's Insoluble Cement, ¼ oz.,	1.
Dr. Flagg's Plastic Enamel, per Pk'g,	2.
Fossiline, " "	2.
Metcalf's Cement, " "	2.
H D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.
½ " " any above "	1.
J D. Justis's Acme Cement,	
One oz. Package,	3
Half " "	1.
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.
" C. N. Pierce Phos. Zinc, " "	2.
" T. O. Oliver's Oxy Phos, " "	2.
" Smith's " Chloride, " "	1.
Houghtons's Os-Artificial, " "	1.
Poulson s Mineral Plombe, " "	2.
Dawsons's Mineral Cement " "	1.
Caulks's Diamond "	
Per Package, 2 Colors,	1.
" " 1 "	1
Caulk's Hydraulic Pebbles, large Pk'ge,	2

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.
Sam'l S. Whites No. 1 Improved,	"	2
Holdfast Rubber,	"	3.
Doherty No. 1,	"	2.
" " 2,	"	2.
Star Rubber,	"	3.
Sam'l S. White's Bow Spring,	"	2.
Whalebone Rubber,	"	2.
Sterling Rubber,	"	2.
Black Rubber	"	2.

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$3
Sam'l S. White's	"	3.

SNOWDEN & COWMAN
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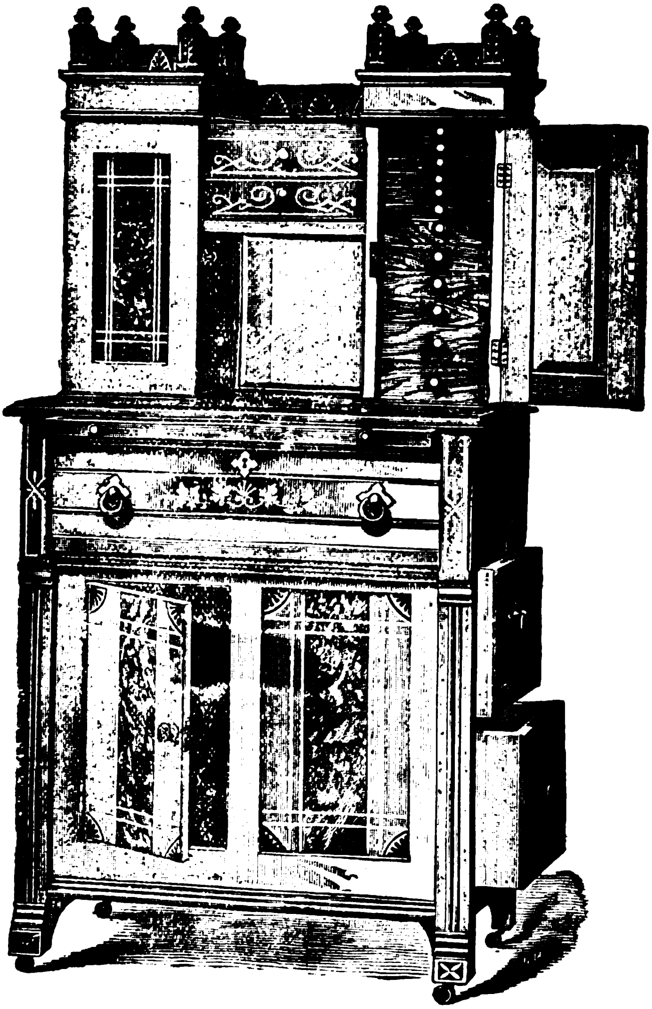
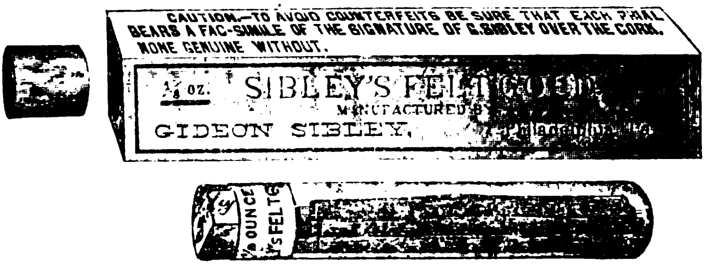
Improved Cabinet Case No. 10.



his Cabinet Case is made of black walnut, hard oil finish. The panels are nch veneer, and the mountings are all nickel plated. The total height is et 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 wers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches p. A door closes over all these drawers. On the opposite side is space e size, with adjustable shelves for medicines. Connecting the two parts ve are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a eled plate mirror, 10 x 10. The lower portion contains one drawer in nt, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16½ by ½ inches p, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. ront is a closet, 20 x 16, 12 inches deep, with shelf.

PRICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	60.00.
" " Knoxville Marble, (pink) -	60.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.
RANCH: 29 Circle Street, Indianapolis, Ind.


CAUTION.—TO AVOID COUNTERFEITS BE SURE THAT EACH PHIAL BEARS A FAC-SIMILE OF THE SIGNATURE OF G. SIBLEY OVER THE CORK. NONE GENUINE WITHOUT.
¼ oz.
SIBLEY'S FELT GOLD
MANUFACTURED BY
GIDEON SIBLEY, Philadelphia Pa.
OUNCE
SIBLEY'S FELT

GOLD FILLING MADE EASY

BY USING

SIBLEY'S FELT GOLD.

After a long series of experiments, I am now able to offer to the profession an entirely new form of Gold for Filling Teeth, which enables the operator to work more rapidly, with greater ease, and produce better results than with any other form of Gold. The Gold is prepared in strips of convenient thickness that may be cut with sharp scissors or a knife into pellets of any desired size. In color it

RESEMBLES FROSTED GOLD.

Is absolutely pure, thoroughly cohesive and homogeneous and readily spreads; conforming to the walls of the cavity.

MAKING A PERFECTLY TIGHT FILLING.

Unless the Gold is exposed to moisture annealing is unnecessary.

Full directions for use accompany each package.

That the profession may have an opportunity to test this Gold, without buying the usual minimum package, for a short time I will put up packages containing **1-40** of an ounce; price, $1.00.

PRICES OF GOLD AS FOLLOWS:

⅛ ounce, $4.50. ½ ounce, $17.50. 1 ounce, $34.00.

CAUTION.—See that a fac-simile of my signature is over the cork of each phial none genuine without.

CASH MUST ACCOMPANY ALL ORDERS FOR GOLD.

Needle Foil Carrier.

PATENT APPLIED FOR.

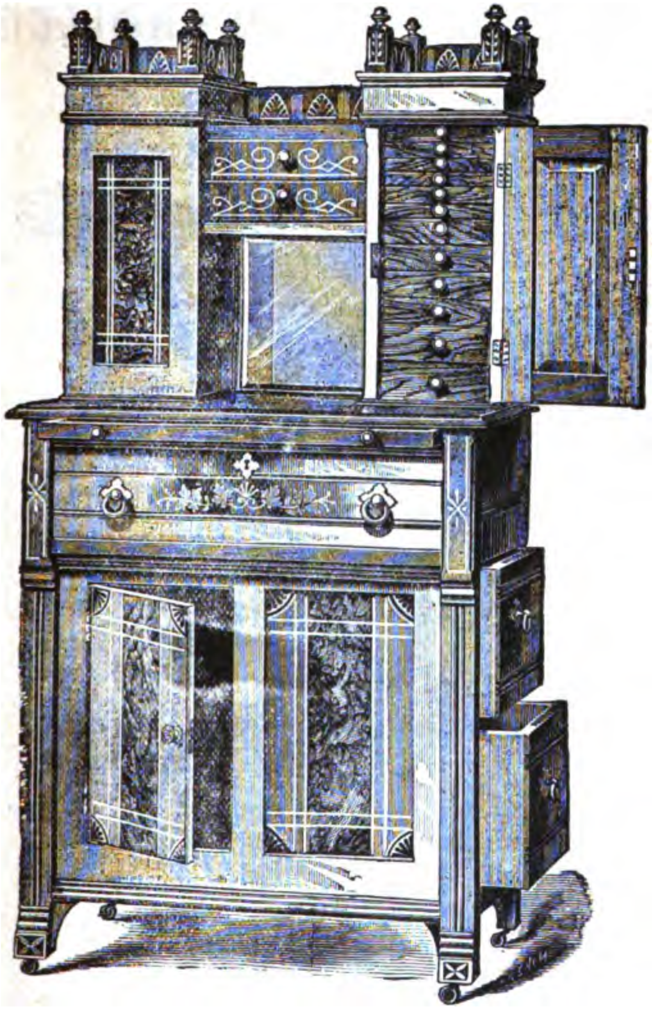
The cut in the margin represents the full size of this useful instrument.

It consists of a fine needle point, controlled by a spring with sufficient tension to hold it extended while picking up the Gold and carrying it to the Cavity, by pressure the Gold is then forced into position when the spring allows the needle to recede and free itself, leaving the Gold in place. This Carrier was especially designed for Sibley's Felt Gold, but will be found to surpass anything heretofore used for this purpose with any form of gold. Price, $3.00.

GIDEON SIBLEY,
13th & Filbert Streets.
PHILADELPHIA, PA.

FOR SALE BY SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2¼ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

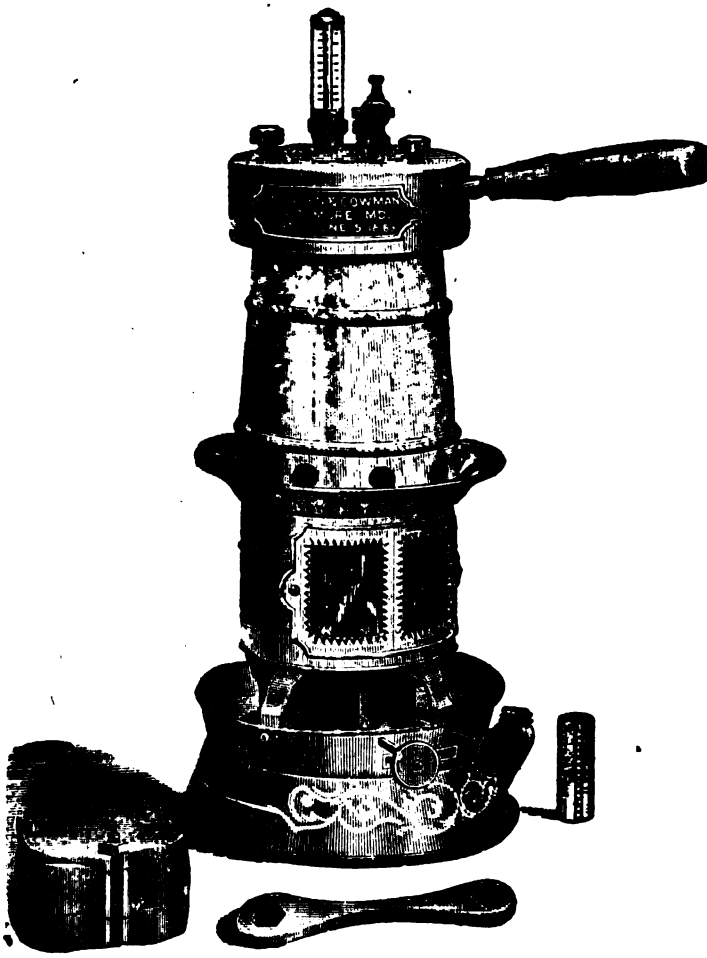
PRICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	50.00.
" " Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, TOLEDO, OHIO.

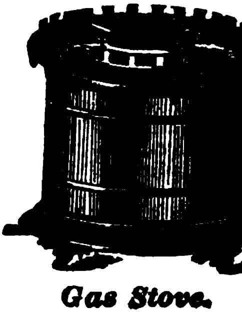
BRANCH: 29 Circle Street, INDIANAPOLIS, IND.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZE



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***



Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right: and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—HOWARD W. HOOPES, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—DRS. WILLIAMS AND PENNINGTON.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. DUCK, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—THOMAS H. DAVY, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—BERNHARD MYER, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. BIERBOWER, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—WM. B. FINNEY, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞ Sprinkle rubber packing with powdered Soapstone before putting cap on.

SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

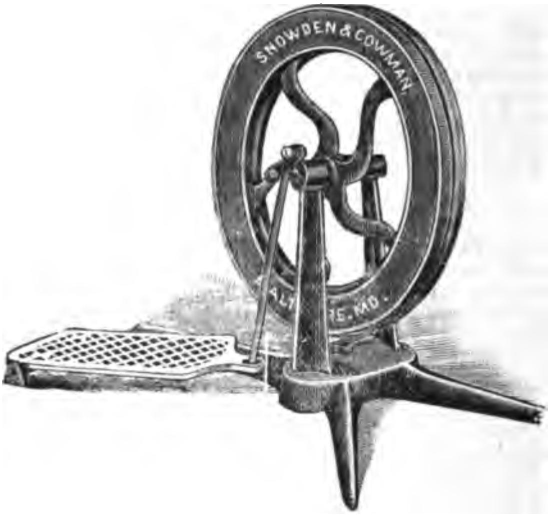
KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

+FLY WHEEL, No. 1, New.+



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$8.00**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

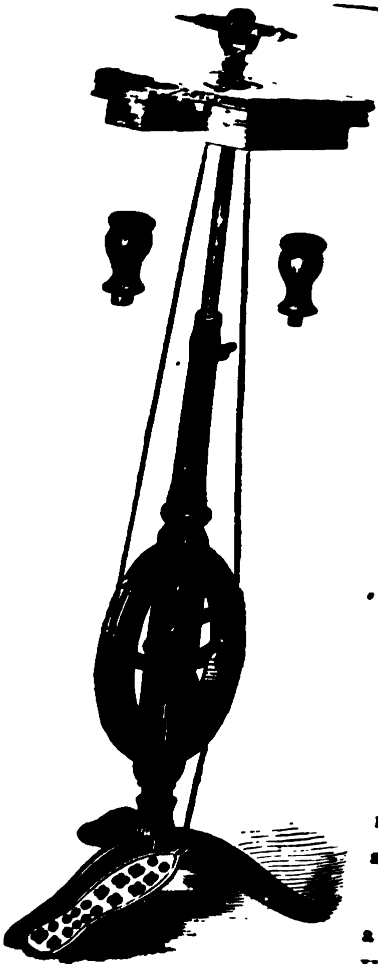
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - -	15 00
" " Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel. No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Hedd, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 50
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

American La



This cut re
proved Lathe. It
very best manner, a
for either the *Office*
It has a solid spindl
which is a taper scre
felt wheels, and also,
large corundum whee
side of the spindle ha
a large corundum w
screw to receive the
which very small corun
can be placed.

It has a movable c
table, which is capab
elevated ELEVEN incl
commodate the operator
sitting or standing postu

Either end of the spin
thrown towards the op
more convenient, by the
at the top of the column.

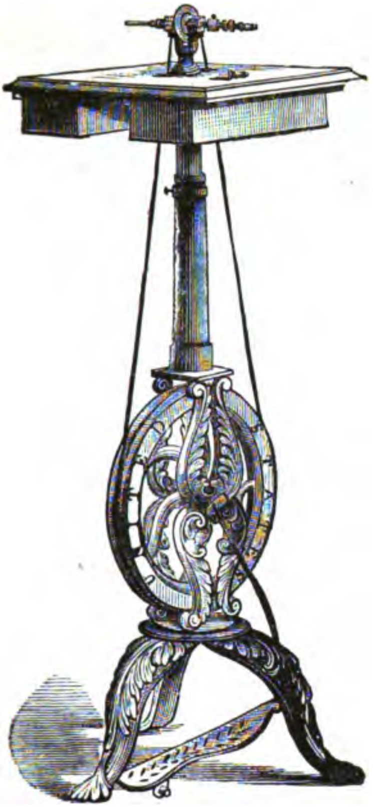
☞ We also make for th
a Socket Spindle—similar
U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - $1
" " with Socket Spindle, with two Chucks. 15
" " with Extra Large Driving-Wheel, 16
" Chucks, extra, - - - -

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Ba

ITED STATES LATHE.



er to the dentist a most complete FOOT LATHE for grinding polishing plates.

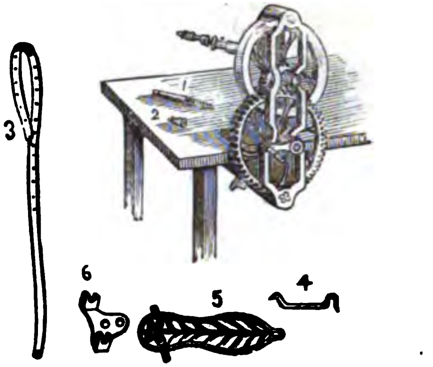
een gotten up in a superior manner, great care having been taken t durable and efficient. It has a movable column and table, which of being elevated eight inches, to accommodate the operator in itting or standing posture.

be packed in a box sixteen inches square, and can be set up in a tes, presenting a very neat and pleasing appearance, suitable for or laboratory. It is finished in bronze, and runs very light and

Lathe complete with Short Spindle, as per cut. - -	$16 00
" " " Long " - - -	16 00
Stand only, including Cord and Coupling, - -	13 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

Portable Hand or Foot Lat

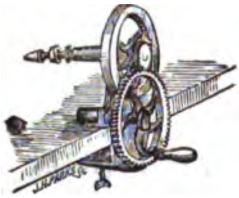


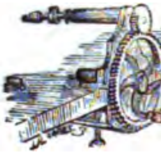
The above is a cut of a PORTABLE HAND OR FOOT L
which is very efficient, manufactured for the traveling
weighs under 7 pounds, and occupies the space of 6 by 9
Members of the profession who have seen it pronounce it fi

Price, complete, - - - - - $6 0
Without Foot Attachment, - - - 5 5

Hand Fly Wheel Lathe.

Hand La





HAND FLY WHEEL LATHE.—It is intermediate b
the Hand Lathe, and the Hand and Foot Lathe; it weig
three pounds and is a first rate Lathe. - - PRICE,

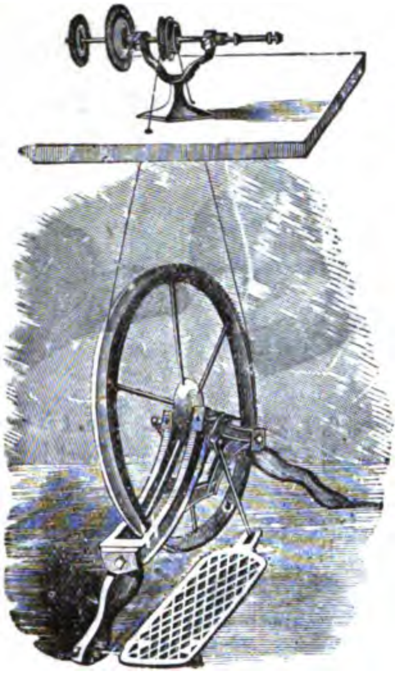
HAND LATHE.—It is small, strong and durable, and
only two and a quarter pounds; we have sold a large nu
these Lathes,—giving great satisfaction. - • PRICE

☞ All of the cog wheels of our Lathes are turned and
a machine, and are uniform, which makes them run true a
little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Bal

The Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

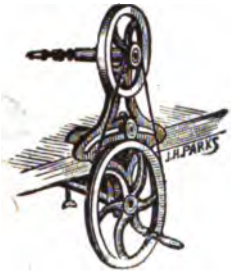
This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.

PRICE..$3 00

DIAMOND FLY WHEEL AND HEAD.

Complete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.



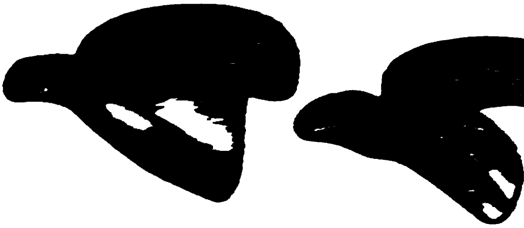
By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel with brass washers and two chucks complete. Weighs only four pounds

PRICE..$4 50

[illegible] IMPRESSION

LONG HANDLES

We Manufacture the following Sizes and Varieti

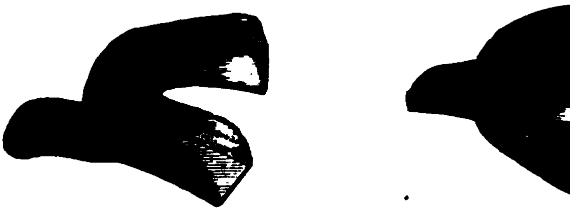


UPPER, Nos. 1, 2, 3, 4, 5, 6, 7.—No. 1 is the larg
LOWER, " 1, 2, 3, 4, 5. —No. 1 is the larg

PARTIAL LOWER CUPS.

ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the larg
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the larg

UPPER AND LOWER CUP



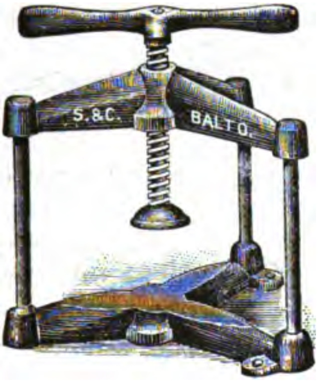
PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 i
FULL LOWER— " " " 12, 13, 14—(No. 12 i
PRICE..............................Each...........

SNOWDEN & COWMAN,
9 West Fayette Street, Baltimo

SNOWDEN & COWMAN'S

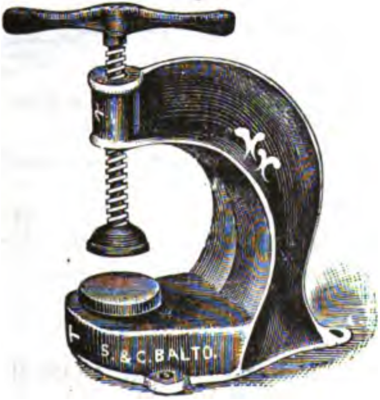
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with **ubber.** It is of great advantage, saving screws and flasks. **he upright** rods are of wrought iron and the handle of the **crew can** be detached. They are *well made* and *very strong*, **nd has** been made larger, so that it will take any Flask in the **arket.** Price, - - - - $1.50.

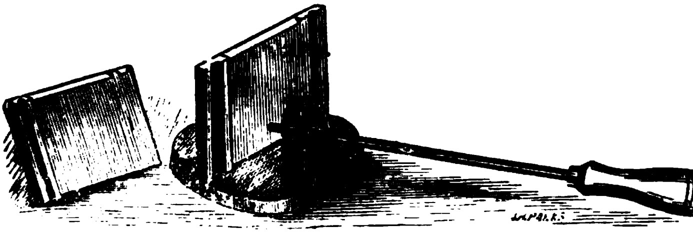
No. 2, New Style.



This Press is made of cast iron, very heavy, with steel screw **nd** detachable handle. It has a Pivot Plate to level up the **lask,** insuring always a central pressure on the flask ; will take **ny** flask in the market. Price - $1.50

SNOWDEN & COWMAN'S

INGOT MOULDS



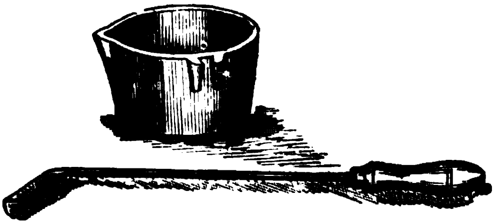
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2

No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - - $

No. 3, will cast a plate 3 inches wide and 4 inches long also round, half round and square bar, - $

LIBERAL DISCOUNT TO THE TRADE

Ladles and Handles.



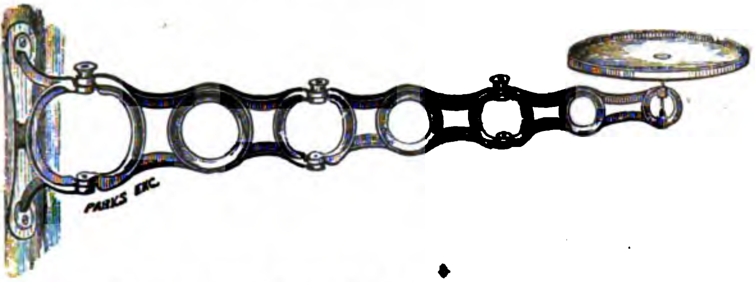
We make three sizes of Ladles; one handle will fit each Ladle, an removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle....................
Nos. 2 and 3 Ladles, without handle, each....................
No. 1 large " " " " ....
Handles of wrought iron, each....................

SNOWDEN & COWMAN,
No. 86 W. Fayette St. Balti

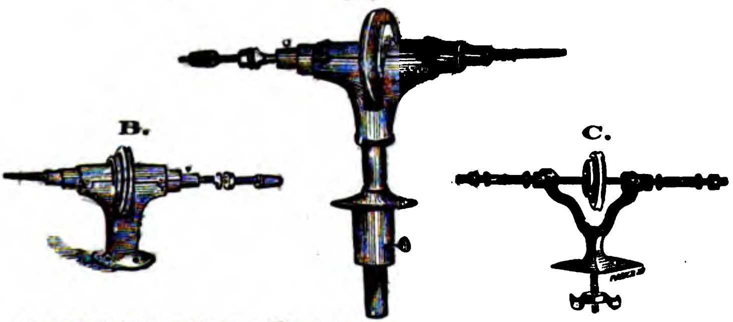
Snowden & Cowman's Extension Bracket.



This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

Price, Round Table as per cut,	$6 00.
Square " with drawers.	8 00

TABLE HEADS.



A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table..................................PRICE $5 00

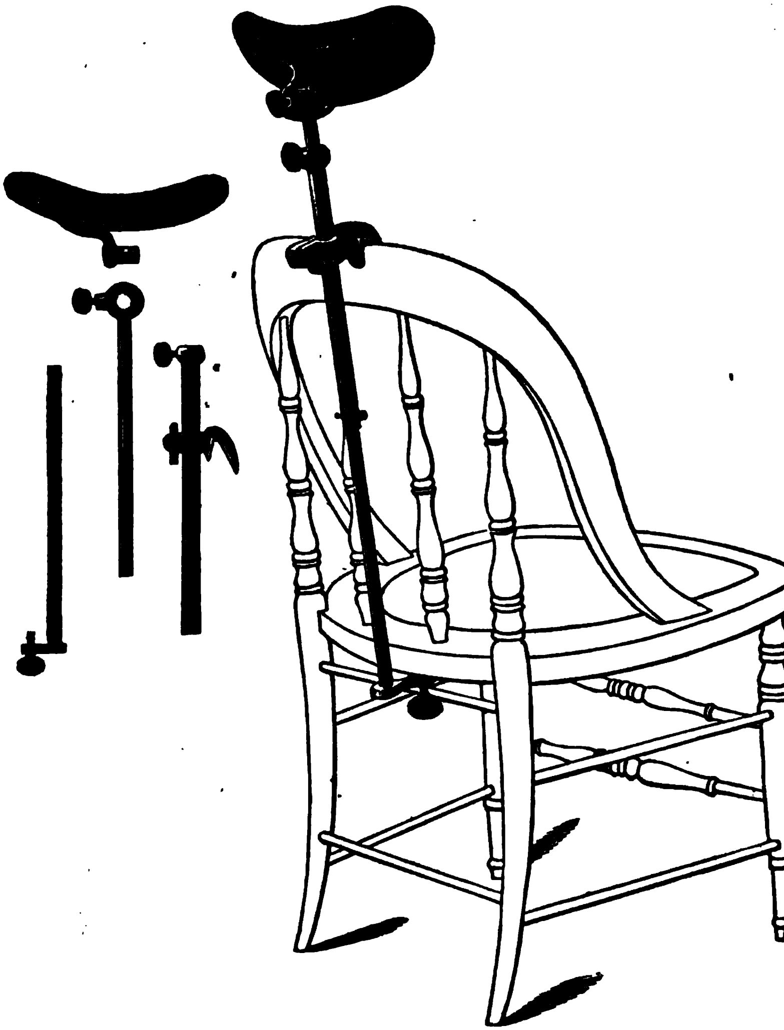
B.—U. S. LATHE HEAD, with holes in the base to screw to any table.
PRICE—Short Spindle (as per cut B)..................$4 00
" Long Spindle.................................. 4 00

C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which retain the wheels and brushes, are of Brass. The spindle is of the best unannealed hammered steel, and of the size to suit the holes in the wheels
PRICE.................. ....$6 00

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Res



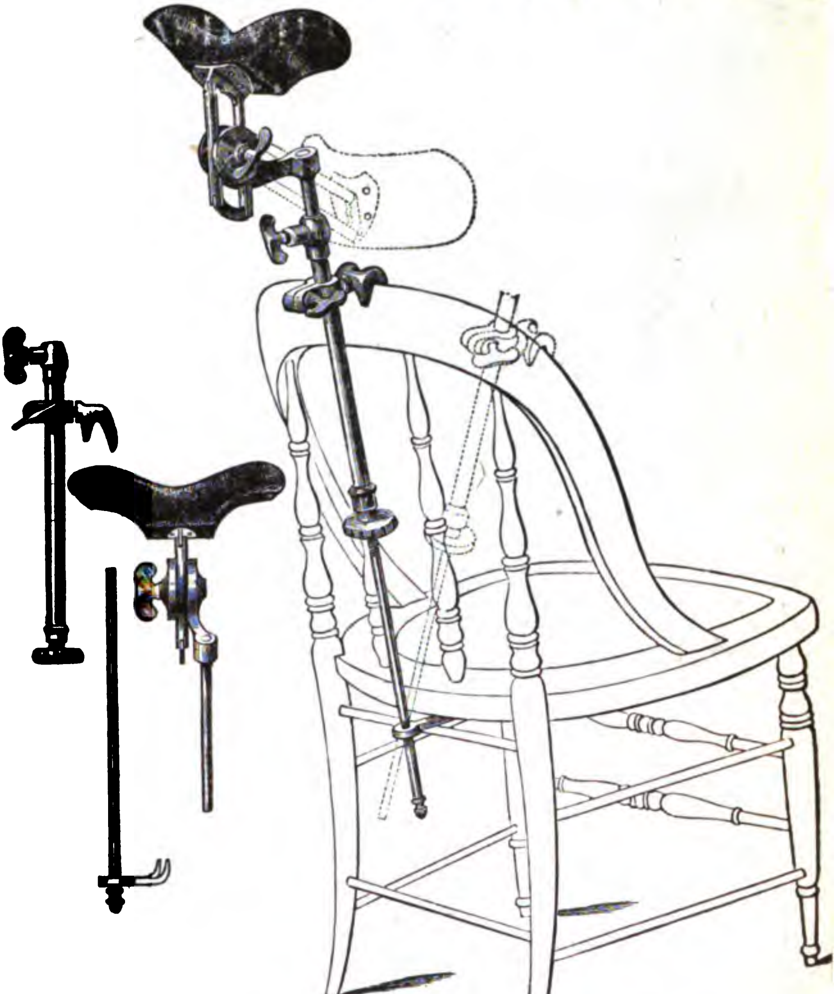
This Head-Rest can be attached to any chair, is very firm, and can be raised
ered or moved backward or forward without interfering with the attachment
chair. It weighs only 4 lbs., and occupies a space only of 18 x 4 inches.

PRICE, $

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



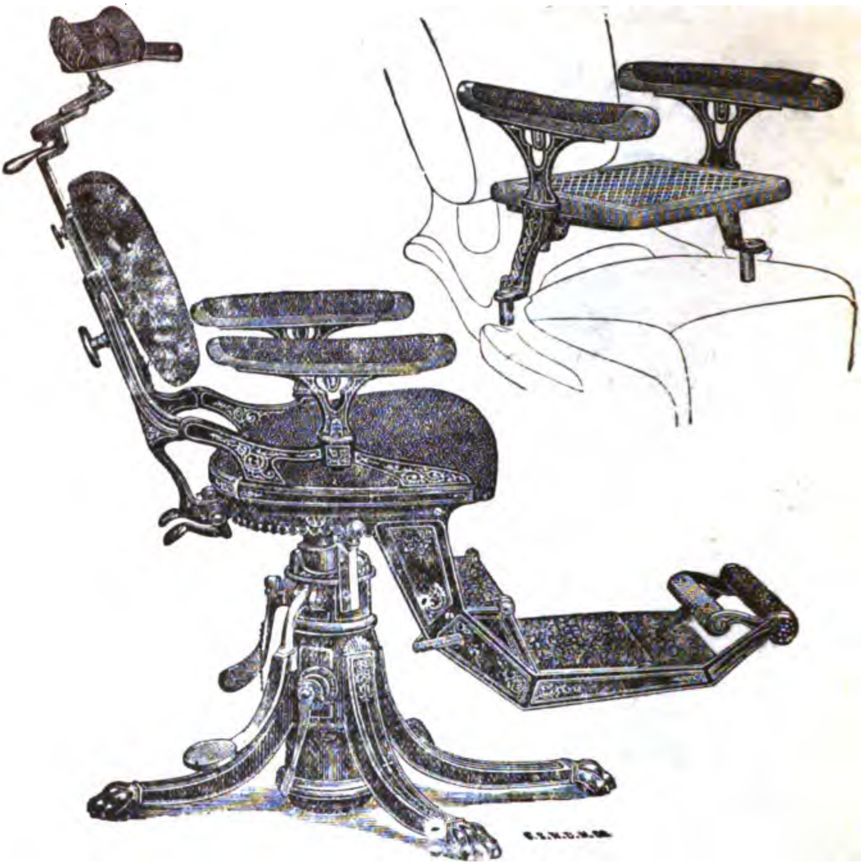
PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN,

West Fayette Street, Baltimore, Md.

The Improved Wilkerson Chair.



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

PRICES.

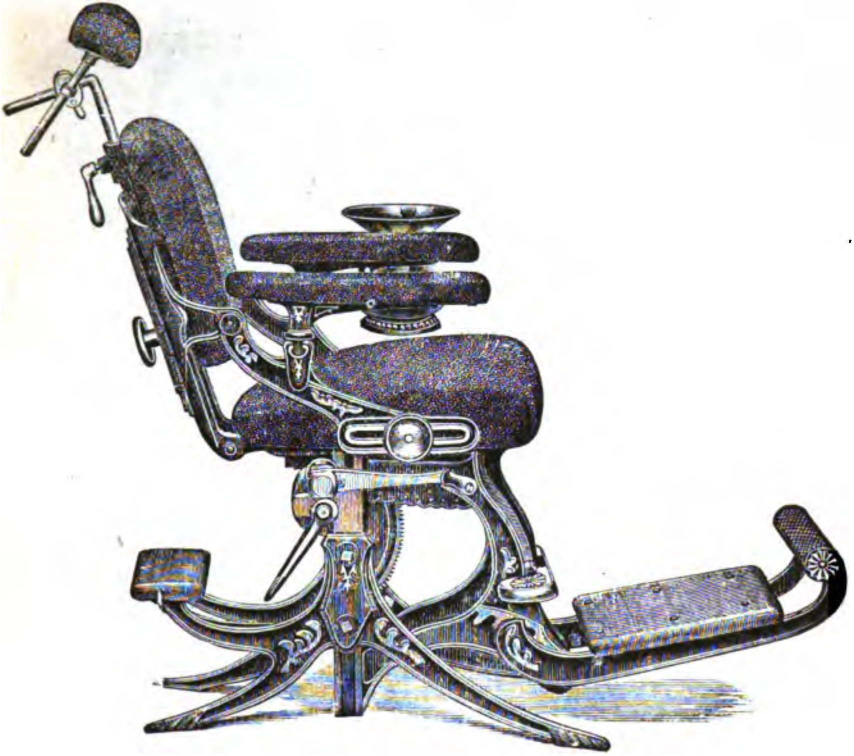
In best quality Green, Crimson, or Maroon Plush - - - - -	$180 00
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet - - - - - - - - - -	200 00
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match - - - - - -	210 00
In Crimson Plain Turkey Morocco or Leather - - - - - -	180 00
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests -	210 00

BOXING FREE.

For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$180.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

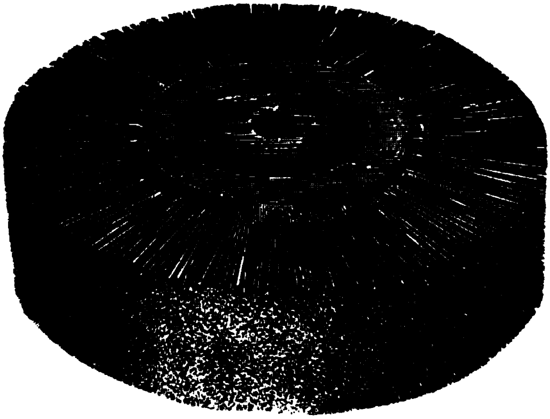
PRICE.

In Corded Upholstery.	$105.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

NOVELTY BRUSH WHEELS.



STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1¼	inches	diameter,	each	$0.1
"	4	1	"	"	"	1⅞	"	"	"	.14
"	1	2	Rows	"	"	1½	"	"	"	.1
"	2	2	"	"	"	1½	"	"	"	.1
"	5	2	"	"	"	1⅝	"	"	"	.18
"	6	2	"	Medium	"	1¼	"	"	"	.1
"	8	2	"	"	"	1¾	"	"	"	.1
"	10	2	"	Soft	"	1¾	"	"	"	.1
"	7	2	"	"	"	1¾	"	"	"	.1
"	9	2	"	"	"	1¾	"		"	.1
"	11	2	"	"	"	1⅞		"	"	.2
"	14	2	"	"	"	1⅞		"	"	.2
"	13	2	"	Medium	"	1⅞	"	"	"	.2
"	19	2	"	Soft	"	2⅜	"	"	"	.2
"	22	2	"	"	"	2⅜	"	"	"	.2
"	21	2	"	Medium	"	2⅜	"	"	"	.2
"	20	2	"	Stiff	"	2⅜	"	"	"	.2
"	18	3	"	Soft	"	2	"	"	"	.2
"	17	3	"	Stiff	"	2	"	"	"	.2
"	26	3	"	Soft	"	2¼	"	"	"	.3
"	50	3	"	Soft	"	3	"	"	"	.3
"	30	4	"	"	"	4	"	"	"	.4

CONVERGING BRISTLES.

No.	16	3	Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.2
"	15	3	"	Stiff	"	2⅛	"	"	"	.2
"	24	3	"	Medium	"	2¼	"	"	"	.3
"	23	3	"	Stiff	"	2¼	"	"	"	.3
"	28	4	"	Medium	"	3	"	"	"	.4
"	27	4	"	Stiff	"	3	"	"	"	.4

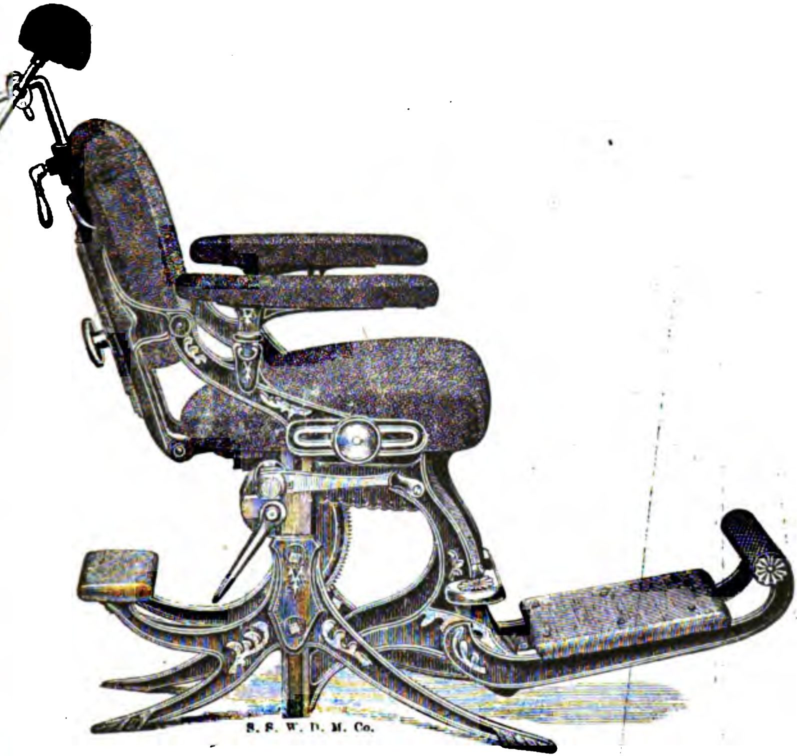
STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2	Rows	Stiff	Bristles,	1¼	inches	diameter	each	0.1
"	66	2	"	"	"	1⅞	"	"	"	.2

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2	Rows	Stiff	Bristles	1¼	inches	diameter	each	0.1
	65	2	"	"	"	1⅞	"	"		.2

THE CYCLOID CHAIR.



ented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 383. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while rding a variety of essential movements, could be sold at a lower price than the kerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surses anything heretofore offered for the money, the Cycloid is *the* chair. It is ngly built, and the finish and general appearance make it a desirable addition to ell-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is rked with great ease and rapidity. Should the crank by accident slip from the d the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator yet be of service to the patient.

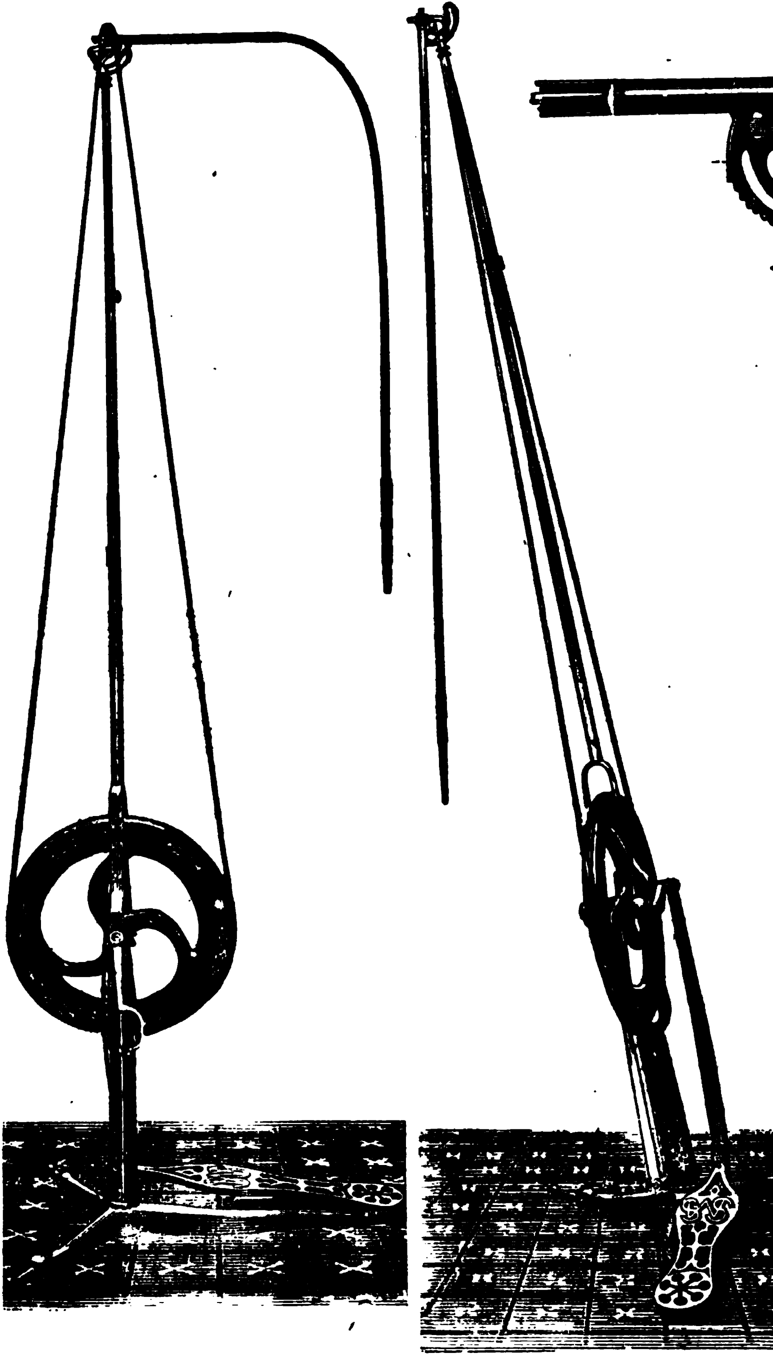
The foot-board can be adjusted in four positions, and a permanent support for foot of the operator is placed at the back of the base, the convenience of which be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the of the Chair.

Price, upholstered in Corded Material,	$	80 00
" " " Best Quality Maroon or Green Plush,		95.00

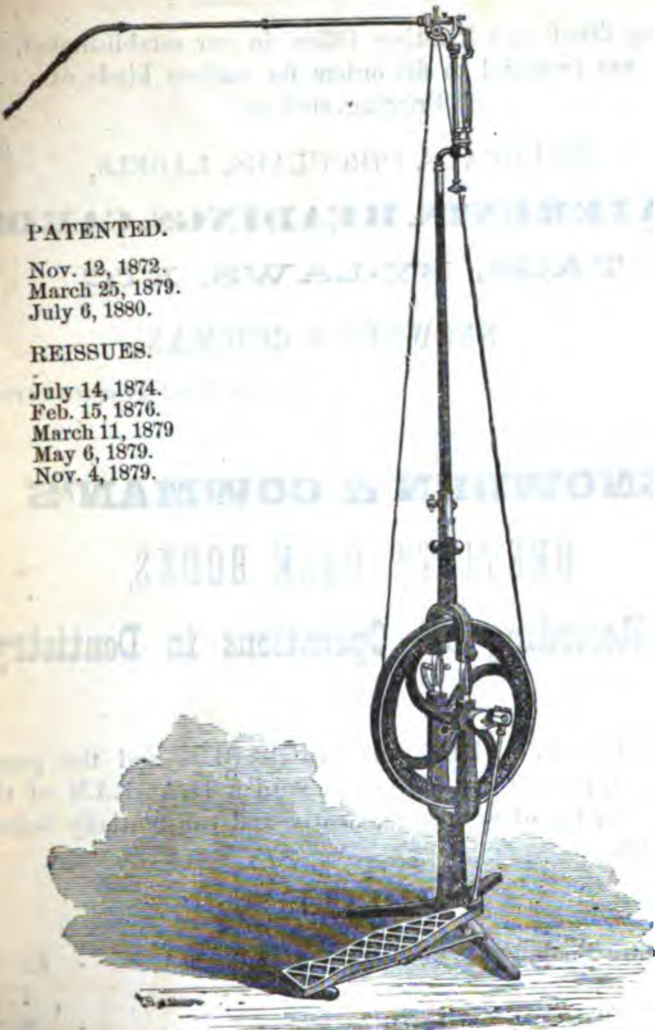
For Sale By SNOWDEN & COWMAN.

THE S. S. WHITE IMPROVED DENTAL EN



For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimor

THE JOHNSTON DENTAL ENGINE.



PATENTED.

Nov. 12, 1872.
March 25, 1879.
July 6, 1880.

REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879
May 6, 1879.
Nov. 4, 1879.

PRICES.

Engine	$40 00
Boxing	75

FOR SALE BY SNOWDEN & COWMAN,
86 WEST FAYETTE STREET, BALTIMORE, MD.

JOB PRINTIN

Having fitted up a Printing Office in our establishmen
are prepared to fill orders for various kinds of
Printing, such as

BILLHEADS, CIRCULARS, LABELS,

STATEMENTS, HEADINGS, CAR

TAGS, BY-LAWS, ETC

SNOWDEN & COWMAN,

No. 86 West Fayette S

SNOWDEN & COWMAN'S

DENTISTS' CASE BOOKS,

For Recording all Operations in Dentis

WITH

TITLE PAGE, INDEX OR ALPHABET, and the numbered, printed on fine paper, with a DIAGRAM teeth at the top of each page, neatly and substantially in muslin.

PRICES.

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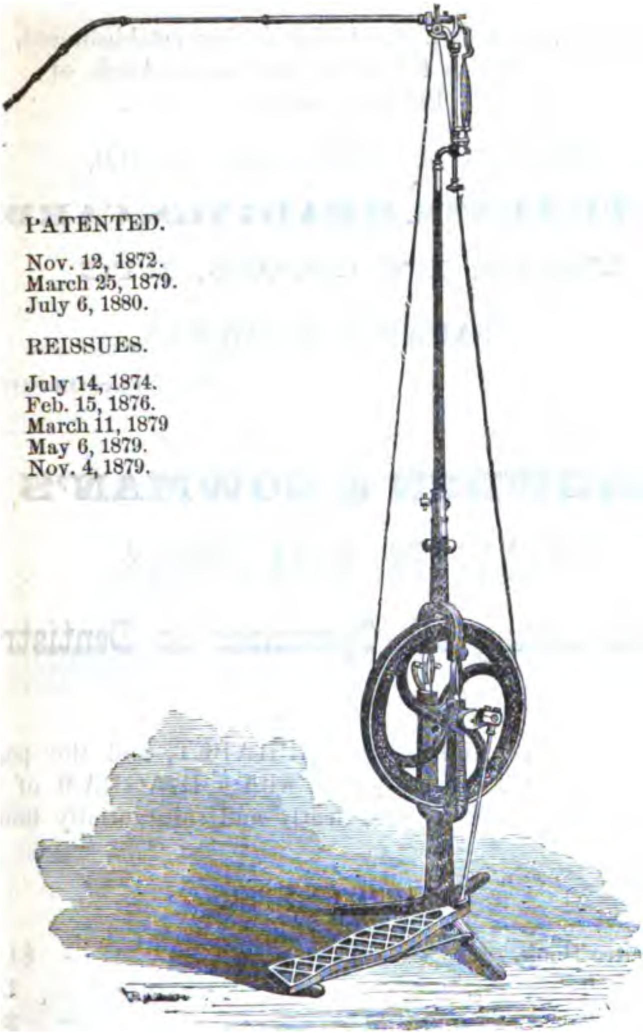

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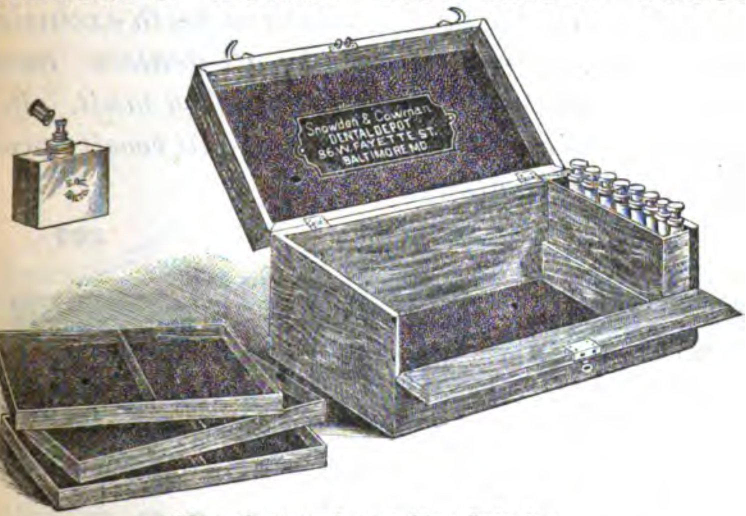
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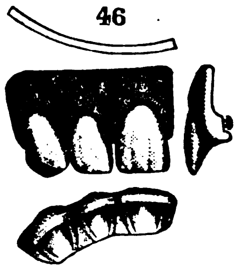
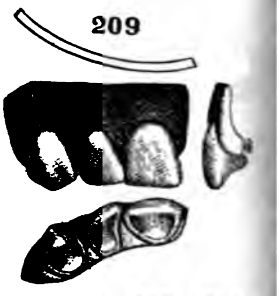
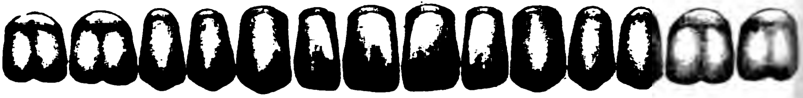




93 

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THE
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VOL. XXII. THIRD SERIES—JANUARY, 1889. NO. 9.

ARTICLE I.

THE TONSILS (FAUCIAL, LINGUAL, PHARYNGEAL AND DISCRETE); THEIR FUNCTIONS AND RELATION TO AFFECTIONS OF THE THROAT AND NOSE.

BY SCANES SPICER, M. D. LOND.,

[Physician to the Throat Department of St. Mary's Hospital.]

It has long been known that lymphoid tissue, especially in the form of lymph follicles, is very extensively massed together in the naso-pharynx and pharynx. The most conspicuous of these masses, the faucial tonsils, are very familiar pathologically. Likewise is that mass known as the pharyngeal or Luschka's tonsil, situated in the vault of the naso-pharynx, and which, when hypertrophied, forms post-nasal growths. To a less extent is appreciated that aggregation of crypts and follicles called the lingual or fourth tonsil, situated at the base of the tongue between the circumvallate papillæ aud the epiglottis, although its pathological conditions are among the most fruitful causes

of many of the paræsthesiæ and dysæsthesiæ of the th
To the above must be added those discrete patche
follicles on the pharyngeal walls which form the anaton
lesion in chronic granular pharyngitis, and an enumera
has been made of the principal groups concerned in mo
states of this area. To understand why these var
tonsils are so pre-eminently and conspicuously affecte
diseases of the throat and nose, it is necessary to glanc
their relations to adjacent structures and to the funct
which they perform in the channels in which they are fo
as far as is known; for there can be no doubt that such
large masses, exhibiting, moreover, some complexit
arrangement and sharing so readily in disease, must s
in the performance of some very important physiolo
function or functions.

The Faucial Tonsils.—Taking first the faucial to
it must be remarked that physiologists have been
much in the dark as to their true functions, if we a
judge by the statements, or absence of statements, in
different English text-books of physiology; and physic
and laryngologists have not elucidated the matter m
The prevailing view appears to be that the faucial to
are essentially organs for the secretion of a lubrica
fluid to aid in moistening the bolus of food before deg
tion. Now, as the faucial tonsils are developmentally
tions of the mucous membrane, there is no reason why
should not be provided with mucous glands to the
extent as the rest of the mucosa, and so secrete a
lubricating fluid, though insignificant in amount comp
with that from the salivary glands. But that this secr
is a quite subsidiary and unimportant function of the fa
tonsils is palpable from the facts that in any tonsil, hea
or diseased, infantile or adult, the component tissue is
phoid, arranged in follicles, with more or less fibrous ti
and that the secreting mucous glands are very scanty,
indeed, in the ordinary excised tonsil not demonstr
No doubt, when these organs have been excised for hy

trophy, the fibroid changes have caused atrophy of whatever gland tubes there might have been. Such fanciful theories as that the faucial tonsils are developed as compensatory organs for warming the inspired air when there is nasal obstruction, that they are reservoirs of nutriment like adipose tissue, and that their function is to keep the liquor amnii from passing into the fœtal pharynx, require no refutation here. It is to Dr. Hingston Fox in his admirable paper * that we are chiefly indebted for a lucid exposition as to some of the main functions of the faucial tonsils. His conclusions are, firstly, that the faucial tonsils act in the prevention of fluid waste in the economy by reabsorbing the buccal secretions to a large extent after their work is done, and especially in the intervals of the deglutition acts; secondly, that they absorb certain of the elements of the food bolus as it is squeezed past them in deglutition; and, thirdly, that they form part of the blood-manufacturing system, and use up any nutriment remaining in the spent buccal secretions, acting, as he poetically expresses it, as "nurseries for young leucocytes, planted by the waterside, and drawing their sustenance from the nutrient stream." The facts on which these views are based may be classified as follows:—Firstly, the *anatomical.* The tonsils are like sponge in texture, consistence, and structure, being riddled with lacunæ or crypts. Every bolus of food must be squeezed against them as it is swallowed, a condition most favourable for the transfer of soluble matters. Then, in the intervals of deglutition, these spongy organs lie in the glosso-epiglottic fossæ, soaking in the buccal secretions, which fill up all their pores, and are delayed in their passage to the pharynx, if not entirely absorbed. Further, the tonsils are constructed on the type of a mucous membrane corrugated so as to expose a large surface to something, and on these corrugations are thickly-studded lymph follicles, as well as in these organs a very rich plexus of

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* *The Lancet* and "Journal of Anatomy and Physiology," 1886

lymphatic vessels, which must have some function, an what more probable than the relation suggested of whic we have so much confirmatory evidence? Also, thes follicle aggregations are situated at places just below th output of the buccal secretions, and in the course whic these must take. Secondly, the *histological.* The fauci tonsils are composed of tissue—lymphoid follicles— almost identical with that of the essentical parts of th blood-manufacturing system, the spleen, and lymphati glands. Moreover, these adenoid follicles are densel crowed with leucocytes in all stages of development an with divided nuclei. The lymphatic vessel plexus througl out the tonsils is one of the richest in the body. Thirdl the *physiological.* The faucial tonsils have very free arteri blood supply, which implies very considerable work don Next it is a general law that fluids thrown out in th intestinal canal are absorbed by the segment of the intestin below, and in this area we have similar structures, th solitary and agminated glands, which are not found els where in the body. Then, as a general rule, in health th tonsils atrophy in middle and late life, when blood manu facture is less active, and, on the other hand, tend to b large in children, when lymphoid tissues elsewhere ar abundant and active, and blood manufacture is at its clima for the rapid processes of growth and nutrition. The con siderations already stated render the correctness of th above views most probable, and it is the object of this pape to show that clinical and pathological facts harmonise wit and corroborate them; and also support the view that othe tonsils are largely channels of absorption.

The Pharyngeal Tonsil.—The anatomy and histolog of this body in all essentials is that of the faucial tonsil there are not so many crypts, nor are they so deep or sub divided, but there are differences of degree. These fact alone would tend to show that its function is not dissimila —viz., the prevention of waste of some secretion. Now in the horizontal position of the body, in man, all the nasa and lacrymal secretions are bound to flow over it. Here, then are all the conditions required on the hypothesis above enunciated; and when the facts from disease are added, the conclusion will be unavoidable that this tonsil saves and elaborates the spent nasal and lacrymal secretions.

The Lingual Tonsil.—An obseivation was recorded many years ago by Dr. Horace Dobell in *The Lancet*, and reprinted in his work on "Winter Cough" (third edition), that the uvula serves to convey the nasal secretions on to the base of the tongue in a plane anterior to the epiglottis, so keeping the constantly dripping fluids out of the larynx. This view was independently arrived at by me, and published in *The Lancet* and in the *British Medical Journal* (vol. i., 1888); but having since found that I have been anticipated by Dr. Dobell, I taking this opportunity of crediting him with priority. My paper, however, read before the Harveian Society in 1888, also pointed out, that in the erect posture these nasal and lacrymal secretions were dripped by the uvula on to an aggregation of crypts and follicles on the base of the tongue, such as was concerned elsewhere in the reabsorption of fluids and blood manufacture, and claimed that the same functions took place here. It is obvious that the buccal secretions also, to some extent, come in contact with the lingual tonsil; also that any portions of fluid not dealt with by the tonsils find the epiglottis keeps them out of the larynx, and run along the grooved lateral spouts of the epiglottis into the pyriform sinuses or hyoid fossæ, when they are swallowed.

Before considering pathological causes which affect pre-eminently one or the other tonsil, it might be as well to state here that usually all the tonsils are more or less involved, and that anatomical lesions are rarely confined to any one.

Commencing first with the pharyngeal tonsil, it must be premised that its morbid conditions are connected with the respiratory current and the channel in which it lies. Of all proximate causes of affections of this body, the most frequent is chronic nasal catarrh, and I shall therefore offer no apology for suggesting an explanation of its genesis. I believe it may be sought in the extreme variations in the temperature, humidity, and purity of the air breathed by civilised house-dwelling mankind, and, consequently, the great variation in the amount of moistening, warming, and filtering that has to be performed by the erectile mechanism of the nose. The savage, living in a state of nature, does not many times a day rapidly change his air currents from a temperature of 80° or more, and often laden with organic impurity and scorched up by a stove, for one frequently near the freezing point, and of widely different degrees of humidity and purity. The air he breathes is of a fairly constant quality comparatively by day and night. Hence there is a certain normal accommodation of his nasal erectile tissues to the work they have to do, which is not suddenly, frequently, or very materially departed from. We have in these considerations a possible explanation of the freedom of the Red Indians from catarrh, and the effectiveness of their nasal channels for breathing purposes as described by Catlin, who spent many years among them. On the other hand, with us civilised moderns, the frequent and sudden changes lead to corresponding activity in the erectile mechanism of the nose, and this repeated for months and years causes the erectile tissues to get into a state of irritable weakness, and to be permanently erected. There is then chronic congestion and discharge of a secretion differing somewhat from the normal. The exciting causes being constantly in action, chronic rhinitis is produced, then hypertrophy of the mucosa and narrowing of the passage. All this time the more or less perverted and acrid secretions have replaced the healthy ones, and have passed back constantly to the pharyngeal tonsil, which, having to tackle irritating secretions, gets swollen, inflamed, and in time hypertrophied, forming post-nasal growths, with all their attendant evils.

Having had constantly under my observation some hundreds of children for the last five years, I have been able over and over again to trace the whole development of post-nasal growths from ordinary chronic nasal catarrh, and that in children who have lived under the most favorable hygienic *regime*, except in as far as the above mentioned variations in the physical characters of the inspired air go; and it is to these variations alone that I can attribute the sequence of events. This state of chronic inflammation and debility of the tissues of the upper respiratory tract is not distinguishable from struma, and is often associated with general anæmia and debility, lympathic gland affection of the neck, concomitant affections of the conjunctivæ and ear (probably extension of inflammatory mischief up the nasal ducts and Eustachian tubes), and also by the forced substitution of buccal for nasal respiration, leading to depressed vitality of the tissues of the rest of the respiratory tract, facilitating the supervention of pneumonia and bronchitis, and preparing the soil for the invasion of the tubercle bacillæ. The above account indicates correctly, I believe, the relation between chronic nasal catarrh and pharyngeal tonsil hypertrophy, and also between the latter and the other morbid states referred to. But there are other causes than this, both of nasal catarrh and of acute inflammation of pharyngeal tonsil, the chief one among them being mechanical irritants, such as ordinary dust, trade dust, pollen, or other finely divided matter, which, carried in by the respiratory current, ultimately find their way back to the pharyngeal tonsil in the secretions which flush the passages, thus causing direct irritation by their presence. In the same way the germs of the specific fevers —measles, scarlet fever, variola, &c.—reach the pharyngeal tonsil and cause it to inflame, block the nasal passages in varying degrees, and, by damming back secretions, to produce anterior rhinorrhœa; similarly Eustachian obstruction, retention of secretions, ear abscesses, otorrhœa, and life-long deafness. Attention to the nose and naso-pharynx in specific fevers will be likely to prevent the conditions which are not susceptible of cure. Another cause of pharyngeal tonsil enlargement is to be found in its absorption of irritant matters regurgitated or vomited by infants into their naso-pharynx. This often produces an acute coryza and nasal obstruction, independent of mechanical occlusion of nares by vomited matter, and due to direct irritation and enlargement of pharyngeal tonsil. Irritating vaginal secretions introduced during parturition and exciting snuffles is a well-known cause of posterior nasal obstruction from inflamed pharyngeal tonsil. It is a striking clinical fact that there is an overwhelming preponderance of pharyngeal tonsil mischief in the young. Is the cause to be sought in the smallness of the naso-pharynx, the early blocking of the nose, and the consequent stagnation and decomposition of the retained secretions? Judging from the anterior rhinorrhœa of such an irritating character as to cause eczema and the foulness of the secretions dislodged in the digital examination of post-nasal growths, I conclude that this is often so, and that the decomposing secretions keep up the enlargement commenced by an ordinary catarrh.

The lingual tonsil next requires consideration, as it is in relation with the same secretions as the pharyngeal, only especially in the erect position. All that has been said, therefore, as to the causes of chronic catarrh of the upper respiratory tract applies with equal force to lingual as to pharnygeal tonsil diseases, and in this conveyance of the acrid products of inflammation we have the main cause of its abnormal states. But there are many causes besides, especially the presence of deleterious and irritating matters in the alimentary ingesta. I would especially mention alcohol, condiments, very hot fluids, very cold fluids, or frequent alterations of these. Each of these can at times be distinctly traced as the exciting cause of lingual tonsil hypertrophy, which, in its turn, is the anatomical fact in the productions of the most obstinate and otherwise incomprehensible paræsthesiæ. In the case of this tonsil, too morbid influences derived from vitiated blood and secretions are very manifest. I refer especially to gout and rheumatism. Both the nasal and buccal secretions are surcharged with the poisons of those diseases periodically, and there can be no doubt that the inflammatory condition of lingual tonsil seen, and central angina and constriction complained of, so often in these diseases, and which often precede other symptoms or are alone present, are due to the irritation of the lingual tonsil by the perverted secretions. Evidence confirmatory of this view is found in the fact that anti diathetic treatment speedily cures the condition. The lingual tonsil does not show the same predisposition to be affected in syphilis as do the faucial tonsils. I venture to suggest that the syphilitic poison is excreted with the buccal secretions rather than with the nasal; and, as has already been stated, it is with the former that the faucial tonsils are in special correlation. An interesting observation bearing on lingual tonsil affection in scarlet fever was recorded to me by a pathologist who asked an explanation. In a fatal case he had observed ulcerations and erosions localised in the area of this organ. This pointed to the fact that the secretions loaded with germs and inflammatory products had vented their fury here, and seems singularly confirmatory of the importance of the lingual tonsil. Taking lupus of the nose and throat again, and infiltrations ulcerations have been found localized in the lingual tonsil area (Chiari and Reil), the infection having clearly been carried over healthy parts to a place where it could enter with the secretions and reproduce the disease. When there is nasal obstruction and substituted mouth-breathing, all the impurities of the environing atmosphere enter the mouth, and many of them alighting on the mucous membrane, are washed on to the lingual and faucial tonsils. Moreover, work is cast on the linings of the mouth—that of warming and moistening the air—which does not belong to them. Hence drying of the surface

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and failure of the secretions to wash away the decomposing *debris.* In the morning the patient complains of a dry mouth and a slight sore throat, due to inflammation of the lingual and faucial tonsils. This at first passes off during the day, but after some time leads to hypertrophy of the irritated structures. Other frequent and potent causes of lingual tonsil abnormalities are tobacco smoking, chewing, and snuffing, their action being irritant to the lymph follicles throughout the upper respiratory tract. Septic influences, bad teeth, neglected dirty teeth, false teeth not kept clean or not well fitting, must be added to the list of common causes of lymph follicle irritation and hypertrophy throughout the whole area under consideration, and must be attended to before a cure can be expected. Lingual tonsil mischief is specially met with in adults, and not so much in children. The reasons I would suggest are that the latter do not indulge in alcohol, condiments, or very hot or very cold fluids; and also that the irritating secretions which in children are penned up in the nose or directed forwards owing to enlarged pharyngeal tonsil to produce a rhinorrhœa, in adults pass on (there being more room in the naso-pharynx) to the lingual tonsil.

Concerning the faucial tonsils, the special relation of these to the buccal secretions has been referred to, and also that the factors in the production of disease of the other tonsils affect these likewise. It is unnecessary, therefore, to recapitulate, but it remains for me to remark additional facts. Very often unilateral hypertrophy of a faucial tonsil is seen. How often is it not in relation with a carious tooth on the same side, constantly contaminating the buccal secretions on that side? There can be little doubt that the tonsils are the sites where the poison of scarlatina, measles, and diphtheria usually enter the system, since they are the parts first and most constantly, and often alone, visibly affected; and the lymphatic glands in direct communication with them most markedly, soonest, and most frequently involved. Faulty voice production and excessive use of the voice are very important causes of affections of all the tonsils. Excessive use demands excessive lubrication, and the latter implies excessive absorption on the part of all the lymphoid follicles. Hence the diffusiveness, chronicity, and obstinacy of the changes met with in the throats of clergymen, actors, and Board School teachers. Regarding lacunar or so-called follicular tonsillitis (which, by the way, I have noticed more than once well marked in the crypts of the lingual tonsils), there are two distant varieties clinically. The first is that in which superficial inflammation and swelling of the mucosa blocks the crypt orifices and causes retention of the shed epithelium and *debris*. This form is acute and usually easily curable, and may be brought about by septic or common catarrhal causes. It is painful, and requires sedative and antiphlogistic treatment. This variety often forms the starting-point of a lacunar abscess, or the process may extend deeper and peri-tonsillar abscess or quinsy ensue. The second form is chronic, and depends on a natural or acquired sluggishness with which the desquamation processes of the epithelium lining the tonsillar crypts are performed, and the *debris* is not normally extruded by a *vis a tergo*. This is not septic or painful, though there may be slight stiffness and discomfort. It is very chronic in course, and difficult to overcome, yielding best, however, to solvent and stimulant local applications. The discrete nodules in the pharyngeal walls partake in the morbid processes going on in the other tonsils, and are similarly affected by the causes acting on them.

It now remains for me to state that it has not been my object in this paper to give details of symptoms and treatment, and merely to indicate the lines upon which nose and throat affections should be treated when, as is generally the case, the various tonsils—the points of maximum irritation—show palpable signs of morbid action; and it must be observed that, when the various methods of treatment in use in the past are considered in the light of the above views as to the functions of the tonsils, it will be seen that these views afford a scientific explanation of the success of those empirical methods which have been hitherto the most approved. These lines would be, firstly, the ensurance of physiological rest to the affected tissues by arresting morbid and lessening profuse secretions, and promoting derivative action into other channels. In acute and sub-acute affections, a blue pill, followed by regular small doses of belladonna, gives excellent results. Secondly the removal of all causes of irritation and inflammation in the inspired air, whether due to occupation, habits, or conditions of existence, and a similar regulation of the habitual alimentary ingesta. Thirdly, the soothing of any acute inflammation or pain by ordinary measures, ice, bland fluids, jelly, cocaine, &c. Fourthly, the attack of any diathetic condition which may be causing perversion of secretions—as gout, rheumatism, syphillis, &c.,—on general principles. Fifthly, the removal of any hypertrophied tissue—such as enlarged tonsils, post-nasal growths, hypertrophied lingual tonsil, granules of granular pharynx, &c.,—which may be occluding any physiological channel or causing mechanical irritation of adjacent parts by the numerous approved methods at our disposal. Sixthly, the prevention of the accumulation or stagnation of any of the secretions of the nose, mouth, or pharnyx by cleaning and antiseptic washes.

In conclusion, I would say—1. The significance of the various tonsils is in their palpable relation to the blood-manufacturing system and to the outpour of copious secretions. The relations of the tonsils to the rest of the organism can be well appreciated by comparing them with the relations of the sewage farm to the town whose refuse it makes use of, and to which it returns its elaborated products. 2. If any of the secretions delivered to the tonsils become contaminated in any way with irritating matter, whether generated in the system or introduced from without, those tonsils in physiological correlation with the affected secretion show irritative changes varying in degree.

The function and affections of the various tonsils afford the key to the comprehension and scientific treatment—and the prevention—of many of the most intractable and recurrent disorders of the nose and throat.—*London Dental Record.*

ARTICLE II.

IMMEDIATE FILLING OF ROOT CANALS.

BY WM. H. POTTER, A. B., D. M. D., BOSTON.

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[Read at the October Meeting of the American Academy of Dental Science, Boston.]

I have chosen this subject not in order to advocate the immediate filling of all root canals, but in order to discuss the question on both sides, considering the conditions favoring the immediate filling of root canals, and those contra-indicating it. In dealing with this problem, it is necessary that we be guided by correct surgical principles. Though the relation of a tooth to its surrounding tissues is unique, yet the disturbances due to inflammation and abscess must be treated accordingly to the same surgical principle as hold in other parts of the body, I emphasize this point because many seem to work upon the teeth as if they were not vital, and as if they were not subject to the laws governing the rest of the body. The whole question as to whether root canals should be filled at once or not depends upon the condition of the peridental tissues, and of the root canals. Some of the common conditions requiring root filling are:

1st. An inflamed pulp which must be destroyed and removed. In this condition there has existed, as a rule, no inflammation of the peridental tissues. The removal of the pulp causes a simple wound involving a minute area at the apex of the root. This wound heals quickly by first intention giving rise to no inflammatory products. The conditions are, therefore, favorable for an immediate filling of the root canals. There can be no reason for delay, except in such cases as bleed profusely from the apical artery, thereby rendering the proper drying of the canal impossible.

A second condition requiring root filling is one in which the pulp has died without being exposed to the air, and has given rise to no peridental inflammation. The condition of such pulps commonly escapes notice for a time. When, however, they have been discovered, it becomes a question whether the pulp cavity should be filled at once, or whether a delay is advisable. It is my experience, and I find it also to be the experience of others, that immediate root filling is not wise under the conditions just described. Though the dead pulp may not have given rise to trouble previous to its having been exposed to the air; yet, when so exposed, it seems to furnish particularly good soil for the growth of putrefaction and suppurative germs. If we were able to remove every particle of such a pulp at one sitting, then it would be wise to fill immediately. We are, however, not sure of so doing, and a small remnant being left is capable of being infected with germs and setting up severe peridental disturbance. The influence of germ life should be borne in mind, as it is probable that no suppurative process occurs without the agency of specific germs. The putrefactive process is likewise due to germs. So long as these organisms are kept from a dead pulp, the pulp creates no disturbance, but when once admitted, they produce characteristic results. The filling of root canals of the class described above should be delayed till the dead pulp has been thoroughly removed and the canals disinfected. We can know that this result has been obtained when the tooth remains comfortable for a short period, after having been tightly filled with cotton and stopped with gutta-percha.

A third condition requiring root-filling is where the pulp, by its death and decomposition, has started up an inflammation or abscess in the peridental tissues. This condition we treat on true surgical principles when we remove the irritant and establish as free drainage as possible for the products of inflammation. Unfortunately, in inflammation about a tooth we cannot get at the seat of the disturbance so readily as we could desire. We must rely on the small apical foramen offering an outlet for the discharge. To close this outlet before all disturbance has subsided and the discharge has ceased seems to me bad surgery and bad dentistry. It may be said, however, that if in such cases the root canal be stopped at once, subsequent trouble may be met by approaching the abscess through the outer alveolar plate, thus giving exit to the abscess and gaining access to the apical space for treatment. Is it wise, however, to force an inflammatory affection to burrow about in the bony alveolar and effect a passage outwards? Is it, moreover, wise to make an artificial opening through the alveolus? If the abscess forces its own way outwards, it causes the patient intense pain and produces a considerable destruction of bone. The practice of trephining through the alveolus, and so reaching the seat of the abscess, I do not find to be very generally advised in our dental authorities except where distinct fluctuation can be made out. Making an external opening is certainly good surgery if we can be reasonably sure of reaching with the trephine the seat of the abscess, and if we can be sure of not injuring important adjoining tissues.

If one examines the anatomical relation of the dental canal and the tips of the teeth, the intervening space is bound to be very small. In trying to reach this intervening space, which is the usual seat of an abscess, we might very easily enter the dental canal and sever the dental nerve or artery. As the lower jaw, the mental nerve which supplies sensation to the chin leaves the dental canal just between the first and second lower bicuspids at a point often involved in abscess about these teeth. In using a trephine at this point there seems to me considerable danger of severing this nerve. But why this discussion with regard to the external opening of abscesses? Because, if we propose to immediately stop root canals before the peridental tissue has become normal we must be prepared to let out the discharge some other way, or else require our patients to endure a considerable amount of pain while the abscess finds its own way out.

I have heard it said of one who practised the immediate filling of root canals that he was very skillful in the use of the alveolar trephine. It seems to me better as a rule to cure the inflammation through the apical foramen rather than to force or make an exit through the alveolus.

A fourth condition to be described is that in which an artificial opening or fistula has already been established as the result of a dead pulp and subsequent inflammation. Such cases having an exit for products of inflammation independent of the root canals are much easier of treatment than the foregoing. As soon as the root canals can be made clean, they should be filled.

When root canals are to be filled at one sitting the best method seems to me to be as follows: Make free access to the pulp cavity, enlarge not only the entrance to the root canal, but its entire length. For enlarging root canals, drills which cut ahead are unsafe. Reamers like the Morey drills which follow the canal and cut at the sides are the safest and most useful. Use a large size drill first, then smaller ones in succession. Even these drills should not be forced, but should be gently advanced only so far as they go easily. There are two reasons for enlarging root canals.

1st. It is easier to fill enlarged canals than those of natural size.

2d. The mechanical removal of the dentine adjacent to the pulp is the best way of disinfecting that tissue. It takes time to disinfect root canals by drugs, and we cannot always be sure that the drugs which we apply do their work. If, however, the infected substance is to a large extent removed bodily the health of the remaining dentine is greatly promoted. I am not an advocate of the extensive drilling out of root canals as practised by some. A process which often results in the perforation of the root and leaves broken instruments to give rise to serious trouble. I do, however, believe in the careful enlarging of root canals to remove decomposable or decomposing substances. When root canals are not enlarged, broaches are commonly used in many ways and not without risk. The peridental tissues may be by them infected through uncleanliness of the instrument or by forcing up putrifying material.

If root canals are to be filled immediately, great care must be given to small details; an antiseptic condition must as far as possible be established and maintained.

While the enlargement of root canals should be the most important antiseptic measure, yet there may be parts of the root canal not completely reached by this process. Certain drugs are therefore of value, First to be mentioned is peroxide of hydrogen, which has the power of converting decomposing substances into harmless ones. Not being a violent caustic, it does not close the tubuli to the entrance of its medicinal power. Having the property of disingaging bubbles of gas as long as any decomposing substance is left, it affords a correct guide for the duration of its application.

Some time ago I had occasion to extract a tooth which had become thoroughly infected by decomposition; it was really a dead tooth. This I immersed in peroxide of hydrogen for several hours, at the end of which time a complete renovation had taken place. The tooth, though kept for some time afterwards, never had the slightest odor. I think no other disinfectant would have done as well. Peroxide of hydrogen should be kept well stoppered in a cold place, the colder the better. Cold condenses the gas and it is less likely to escape. When needed for use a small bottle should be filled. Even with care this drug deteriorates very rapidly; it is especially difficult to keep in the summer time. Other drugs are of value, such as alcohol, which is a detergent and dryer; carbolic acid 5 per cent. and corrosive sub. 1-1000, both of which latter are powerful germicides.—*Independent Practitioner*.

ARTICLE III.

THE INFLUENCE OF MATERNAL IMPRESSIONS ON THE FŒTUS.

BY FREDERICK L. CLASSEN, M. D., ALBANY, N. Y.

[Read before the Medical Society of the County of Albany, Wednesday Evening, November 14, 1888.]

The belief, held by many, as far back as Plato, is becoming stronger now, that the, condition of the mother's mind has a great influence upon her unborn child; that not only deformities may result from maternal impressions, but that modifications of the moral and intellectual character of the child, as manifested in after years, may have their origin in the mental state of the pregnant woman. Hence should be guarded from all injurious influences and painful sights. There are some women so highly impressionable as to react to the slightest nerve stimulus; and from the moment of fecundation the ovum is exposed to various influences which may alter its normal development.

During my first year of practice, a lady, advanced to the eighth month of pregnancy, called at my office, wishing to have a tooth extracted. She asked me if it would do any harm to her unborn child. I told her I did not think it would. I delivered her one month later of a dead child. I have always thought that the death of the child was caused by the extraction of the tooth.

Having this case in mind, I have always deemed it inadvisable to do any tooth-pulling for a pregnant woman. And yet, about three months ago, a lady, of an extremely nervous temperament, wished to have six decayed teeth extracted. She asked me if it would injure her in any way, as she had then gone about three weeks over her menstrual period. I told her it might produce an abortion. "Well," said she, "I will have to run the risk, as I cannot stand the pain." She was put under ether, and the teeth extracted. No abortion followed. She now asks whether the child will be marked.

Many writers are opposed to the theory of maternal impressions, and claim that the deformity is due to an arrest of development or to coincidence. I would mention Dr. J. G. Fisher, of Sing Sing, N. Y., who prepared a very able and scientific paper entitled "Does Maternal Influence Have Constructive or Destructive Power in the Production of Malformations or Monstrosities at any Stage of Embryonic Development?" * I will quote some of his deductions:

1. "That traditional superstition has perpetuated the notion that malformations are the result of mental emotion."

2. "That the medical profession is in no inconsiderable degree responsible for the existence and continuance of this popular error."

3. "That various intense emotions are common with gestating women, and apprehensions of malformation of their offspring exists in the minds of a large portion, yet abnormal births are extremely rare."

4. "That there is nothing like law in the alleged results of maternal mental influence in the production of malformation."

5. "That the occasional apparent relation of cause and effect is due, in most instances, to accidents, which would be far less frequent if the facts could be obtained

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* American Journal of Insanity, January, 1870.

previously instead of *subsequently* to the birth of the child."

6. "Such evidences are not sufficiently numerous and authentic to warrant a rational belief in the origin of monstrosities from the perturbed emotions of the mother's mind."

7. "Like causes produce like results, whereas we find that in a series of cases of any special variety of malformation mental emotions arising from a considerable number of dissimilar objects, even of the most diverse character, are assigned as the cause."

8. "In a large proportion of the cases of malformation no mental or even physical explanation is offered by the parents or friends."

9. "There is no relation between the number and character of these mental emotions and apprehensions of pregnant women and the actual frequency and variety of malformations."

10. "That some of the assumed causes are alleged to have operated upon the embryo or fœtus subsequently to the named period for the evolution of the part which is found to be the seat of the malformation, thereby implying a distinctive as well as a metamorphosing power."

12. "Malformations identical in kind and in degree recur again and again in the human subject, and admit of a systemic classification, definite and distinctive."

13. "Every form of malformation and monstrosity in the human subject, has had its exact morphological counterpart in the lower animals."

15. "The only rational and scientific explanation is to be found in pathological histology."

16. "Monstrosities are not the result of embryological and physiological laws; they are the products of embarrassments to normal development."

17. "Vices of conformation and monstrosities are due to either retarded or excessive development."

Dugas* and Dr. Notman Bridget † opposed the theory; and Dr. D. S. Conant, in a paper read before the New York Academy of Medicine, on "Monstrosities," argues that anomalies are due to arrested development of the fœtus, and not to maternal impressions, based on the statement of Virchow that there is no nervous tissue in the umbilical cord, and the only means of communication between the mother and fœtus is through the medium of the blood. In the discussion of the paper, Dr. Detmold opposed the theory, so also the late Dr. Peaslee, both saying that deformity was due to an arrest of development. The latter adds, however, the following: "When the pregnant woman becomes the subiect of intense anxiety, fear, or other kinds of mental emotions, the offspring might be more or less impressed. The reason for this effect on the fœtus could be explained by the close sympathy between the brain and uterus. The blood going to an impregnated uterus may be so altered in quality as to produce fatal effects on the fœtus, if, after a pregnant woman is frightened, a monster is produced in a *general* instead of a *special* way by the arrest of development. For it is a well known fact that the fœtus, during its various stages of development, passes through certain conformations which in general appearance very much resemble those of lower animals."

Velpeau, Ryan, Demageon and Reinvielliers entertain similar views.

On the other hand, Montgomery, Rokitansky, Carpenter (physiology), Dalton, Flint, Hammond, Allen Thompson, Fordyce Barker and E. C. Spitzka favor the doctrine of maternal impressions. The latter has written a very able and scientific article, ‡ in which he says:

'Those who discredit the evidence accumulated in support of the doctrine of maternal impressions may be divided into two classes. The first consists of those who, of a critical and analytical turn of mind, have unearthed so much that is absurd or inconclusive in the related cases, that they have hastily assumed all to be of the same fallacious nature. The second comprises those whom I would designate as 'coarse materialists.' Let this term not be misunderstood! Every scientist is properly a materialist. But there is a class of writers and workers who cannot see beyond their fingers, who, in view of the fact that the great advance of science in this century has been owing to the methods of the laboratory, have gotten up a sort of spurious enthusiasm for the balance, the kymograph, microscope and thermometer, and with an assumption of hauteur, sneer down everything that cannot be weighed, measured, chemically tested or photographed."

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* Southern Med. and Surg. Journal, Sept., 1886, p. 317.

† Chicago Medical Journal, August. 1875, p. 577.

‡ "Medical Classics" Volume ii, Nos. 2 and 3, Aug. and Oct. 1888.

Again:

"I have never seen an idiotic, malformed child, or one afflicted wtth morbid impulses, derived from healthy parents of families free from hereditary taint in which a maternal impression could not be traced. In a large number a direct correspondence between the maternal impression and the nature of the deformity or peculiarity could be discovered."

After citing several cases, he holds that the doctrine of maternal impressions is maintained by the following facts:

"1. One class of them is established to be due to such by statistical evidence. 2. Another class is established by the exact reproduction of the maternal impression in the fœtus, so exact that all explanations based on the assumption of a fortuitous occurrence must be rejected. 3. Cases are recorded where the same cause produced the same effect in several instances. 4. Cases are recorded where a multiplicity of impressions on the same mother led to a multiplicity of defects in the offsprtng, all of them reproducing the original impression. 5. As already pointed out, the fœtal defect is in harmony with the embryological law that the earlier the influence is excited in the germ, the deeper its effect—in other words, the greater the deformity. 6. The counter-argument of opponents of the doctrine that the monstrosity is often quite unlike the impression to which it is attributed, is met by the fact just cited, and also by the fact that in ordinary (universally admitted) hereditary transmission the same defect is not necessarily transmitted. The transmission of maternal impressions conflicts in no detail with the laws of embryonic development and heredity. It is in complete harmony with them."

Also:

"One fact speaks strongly in favor of the truth of the doctrine of maternal impressions, and that is their consistency with embryological laws, and even with embryological experimentation. It is noted that in producing monstrosities by artificial methods, an interference with development at an early period produces a far greater malformation than one at a later period. In the foregoing series of cases it may have been remarked by the reader that deep defects, involving grave malformation of the brain, occurred in the first two months of pregnancy. That such involving absence of bony parts occurred before the sixth month, and that all birth-marks attributed to impressions occurring in the last month were at most skin deep. It is sometimes possible by a disturbance of a germ at a very early period of its history, to cause a division, in other words, a conjoined twin monster. All the two-headed children of mothers who had been impressed by the "two-headed nightingale" were attributed to impressions occurring in the first few days after conception, and consistently so, for such a deformity cannot be accounted for by causes operating after the second week."

Dr. Fordyce Barker has written:

It will be observed that all who disbelieve in this doctrine base their skepticism on what they regard as physiological reasoning, and chiefly on the assertion that there is no direct nerve communication between the maternal and fœtal system, and that, therefore, nerve impressions cannot be transmitted to the fœtus. Deformities, they urge, are due to arrest of development, but no one has brought forward any sound physiological reason why this arrest of development may not have been caused by maternal impressions, affecting fœtal nutrition by their influence on the maternal blood, as well as by falls, injuries, diseases, intra-uterine amputations by ligation of the umbilical cord, and the various other causes which have been assigned. Those numerous changes in fœtal development where the effect corresponds with known maternal impressions, of which hundreds have been published, are considered as simply coincidences. But if mathematical calculation could be made as to the chances for such a coincidence, I believe that the oods would be so enormous as to be almost beyond enumeration. My personal acquaintance with the profession leads me to suppose that a very large majority utterly disbelieve in this influence, and I ascribe this skepticism to the fact that, while they find this belief almost universal, to such an extent as to cause great anxiety in many of their patients, especially if they have been subjected to any strong emotion, yet the verification of this apprehension is so extremely rare that probably not one in a hundred ever meets with a convincing case.

"Extremely rare as is the occurrence of cases which prove the result of this influence, yet I think the fact is so well proved by sufficient authentic evidence as to make it as certain as any other fact which cannot be explained by science, and there are many such. Indeed, in the light of all the evidence which has been accumulated on this point, it seems to me as reasonable to deny the occurrence of earthquakes because philosophy has not yet been able to give a satisfactory explanation of their cause."

One of the most frequent deformities impressing the mother's eye and transmitted in exact repetition to the child is hare-lip. Dr. Barker relates a case occurring in his own practice in which the influence of maternal impression seems well grounded.

"A lady was married at the age of twenty, when her father made her a present of a house. She was absent on her wedding trip for two weeks, and then went to the Gramercy Park Hotel to stay while her house was being repainted and decorated, and such furniture as she wished was selected and purchased. She had not menstruated since her marriage. On her first day at this hotel she went to the table d'hote, and found herself seated opposite a gentleman with three daughters who all had hare-lips. (This family is well-known.) The first glance at them made her so faint that she at once left the table, and always after took her meals in her private rooms until she moved to her own house. She never mentioned her reasons for this even to her husband, nor had she any suspicion that she was then pregnant. I attended her in her confinement, which was a very laborious one, and she was delivered by the forceps, profoundly under the influence of chloroform. I saw at once that the child had a double hare-lip, and sent for Dr. Carnochan, who had finished the operation before she awoke from the chloroform sleep. On becoming conscious she demanded to see her child, saying that she was certain that it had a hare-lip. I refused to allow her to see her child until the next morning, and gave her a full opiate. The operation was remarkably successful, the mother did well, and the child, now nearly thirty, would not attract attention by the appearance of his lip, but only by an indistinct articulation of a few words."

In a foot-note he adds the following:

"I may here say that this is the only case which has occurred in my practice in which any peculiarity of the child had been anticipated by the mother, although the apprehension has been strongly expressed by many."

As to the question of operation upon cases of hare-lip, whether it should be performed immediately or delayed until a later period, he says:

"My decision was in accordance with my action in the present case. The same course was followed in two cases which I saw in consultation, and with a success which caused no regret."

He also relates a case which was told him b
friend, Dr. A. Brayton Ball, of New York.

"Mrs. B, a woman of highly nervous tempera
pregnant between two and three months with her first c
was much startled by seeing a child about ten year
with a hypertrophied, prolapsed tongue. The child's
pearance was extremely repulsive, and so shocked Mr
that she nearly fainted. From this time on she was
prehensive that her child would be marked in the
way, and this fear was shared by her aunt, who was pr
when the incident occurred, though the matter was
afterward referred to between them during the pregn
At birth Mrs. B.'s child presented exactly the same def
ity. The tongue was hypertrophied, and hung down
the lower lip, but with this exception was perfectly for
The tongue remained outside of the mouth until the
was several years old, and then gradually retreated int
cavity, but has always remained sufficiently large to
fere with the proper enunciation of words. No si
case has been known in either branch of the family.
several children have been born since then, all perfectl
veloped. I regret that I cannot state the exact peri
pregnancy when the 'maternal impression' was made,
happened nearly thirty years ago, but the date prob
fell between the limits mentioned. Mrs. B., though
patient of mine at the time, became so afterward, an
account of the case agrees in every particular with
given me by her aunt, who was with her when the inc
occurred and at her confinement. I make no comme
the case, except to say that I regard it as in the hi
degree improbable that the only relation between the
events is that of mere coincidence."

Dr. Arthur Coe, of Ann Arbor, Mich., report
following. *

"Mrs. O., aged thirty-two, two children, the elder

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* Medical Record, October, 20, 1888, page 479.

twelve years, has always enjoyed good health. The left breast presented two nipples, the smaller or supplementary one being about two inches below the normal nipple. It was correctly proportioned and surrounded by a faint areola. The patient stated that during lactation the secretion flowed freely from the lower nipple, requiring the application of a bandage. The possibility of the supposed nipple being a fistulous opening with everted edges resulting from an old abscess, was considered, but a careful examination and a statement by the patient, to the effect that the two nipples had been present as long as she could remember, seem to be conclusive evidence against that possibility. An interesting point in the case centers in the possibility of the malformation being due to a so called 'maternal impression.' Upon inquiry the patient stated that the mother when about two months advanced in pregnancy, was much startled on one occasion by a young kitten, which jumped upon her breast (the left) and seized the skin just below the nipple. She was much prostrated by the occurrence, which made a deep impression on her mind. The subsequent birth of the child with the peculiar malformation would seem to indicate some dependence thereon."

The cases that could be brought forward in which the theory of maternal impressions seems irresistible are numerous. It is difficult to account for so singular a transmission, as we know of no direct channel of nervous communication, nor can we assume that the circulating fluids can carry or interchange such influence. But let us not voluntarily blind ourselves to facts, as a "future with vastly larger knowledge of physiology and psychology may plainly read the mysteries hidden from our sight."—*Albany Medical Annals.*

ARTICLE IV.

THE TRANSPLANTING OF A RABBIT'S CORNEA INTO THE HUMAN EYE.

BY JULIAN J. CHISOLM, M. D.

[Professor of Eye and Ear Diseases in the University of Maryland, and Surgeon-in-Chief to the Presbyterian Eye and Ear Charity Hospital of Baltimore City.]

Six months since I transplanted a disk from a healthy rabbit's cornea into the cornea of a patient who had lost sight from the effects of a lime burn. For three years his eyeballs and lids had been united in symblepharon. I had liberated the left eyeball, and on two occasions had dissected away the whole anterior layer of the fleshy cornea with the hope of meeting a transparent portion within. Granulation tissue would soon form again, and a grayish red cornea would finally always remain. He had good light perception, but could not get beyond this low degree of vision. An active man, of twenty-nine years of age, he seemed doomed to permanent blindness for the remainder of his life. His constant appeals for further operations, and the desire to have me keep on cutting away the fleshy layers of granulation tissue as often as they formed, induced me to transplant a disk of clear rabbit's cornea into the centre of his opaque one.

By means of Dr. Von Hippel's ingenious instrument I succeeded in trephining the human cornea, through all of its layers, down to the membrane of Descemet. Seizing the edge of the circular-cut piece, I had the satisfaction of drawing it away entire, leaving a clear lining membrane to the anterior chamber of the eye. Through this clear peep-hole vision was at once restored. Into this well from which the trephine had taken the thick plug I inserted a disk of clear cornea cut out from a living rabbit's eye, by the same trephining instrument. The piece fitted perfectly into the hole made for it, as a bung does in the bung-hole of a barrel, its Descemet membrane lying upon the Descemet membrane of the human eye. The closed lid and a compress kept the graft in position. In a very few days the transplanted piece had become thoroughly adherent to the circular incision. From that time the rabbit's cornea has become identified with that of the man.

As to the successful transplantation of a graft there is now no longer a doubt. How the graft would behave in its new relations was the question of importance to the thousands of blind persons anxiously awaiting the final result of such experiments. To become united to the fleshy walls of the human cornea the transparent disk of rabbit's cornea had to become vascular, and necessarily opaque from infiltration. This was an essential part of the curative process, in order to establish union between the graft and its new bed, and to supply nourishment. Had it not occurred, the transferred piece must have sloughed, skrunken up, and fallen out.

It was very interesting to watch these vitalizing changes as they occurred in the graft. When the eye was exposed after five days of bandaging the infiltrated disk graft, so much whiter than the surrounding red fleshy cornea, made the new central plug quite conspicuous. Some days afterward blood vessels could be traced creeping into the graft from the pannitic margins of the human cornea, and finally the patch became quite pervaded by newly formed blood-vessels. Fortunately it never became fleshy, although the individual vessels of fine calibre, looping over the circular margin at the line of adhesion, could be traced in their meanderings over the surface of the graft. They were directly connected with large feeding vessels in the ocular conjunctiva. In the course of treatment I divided these large trunks so as to cut off the excessive blood supply to the transplanted piece, and have thereby caused a visible shrinkage of the fine red lines in the graft.

After six months the new piece of transplanted cornea retains its distinguishing features, and its outlines can be readily detected. It is grayish in color, with red marginal tracings. No vessels run entirely across the disk. The back and black ground of pupil modifies decidedly the tinting of this central part of the cornea, and becomes more conspicuous monthly as the graft slowly clears up.

Now comes the question of all importance. What good has the patient secured by the experimental transplantation? Fortunately the benefits, even at this early stage of the experiment, are positive. The patient can see large objects ten feet away from him. This amount of sight, already secured, enables him to move about with confidence, when before the operation he dared not move a foot without the aid of a guiding hand. Alone and unattended he can walk for miles along the country roads in the neighborhood of his home. Quite recently he visited the hospital for inspection. Since the operation his whole facial expression is changed from one of permanent anxiety and doubt to one of confidence and cheerfulness. He can already move about with some freedom, avoiding obstacles in his way. He sees persons ten feet off, but not yet to recognize them. This of itself is an immense improvement on no sight. Still I see much better things in store for him. From month to month I can mark his improvement in detecting objects which he did not see on a former visit.

This slow progress is perfectly in keeping with the pathology of the cornea. We are accustomed to observe the snail-like progress in cases of interstitial keratitis, and how months always, and even years are required to restore in such cases good sight to blind people. This piece of transplanted cornea is now undergoing the familiar and regular metamorphoses of interstitial keratitis. While the fleshy cicatrical tissue of the cornea can undergo no change for the better, and must ever remain opaque, there is every evidence that the transplanted piece, infiltrated as it still is, will in time give him the peep hole desired, and will restore useful vision to one otherwise doomed to permanent blindness.

The transplanting of a disk of rabbit's cornea for the purpose of rendering the central portion of an opaque human cornea useful, is in this case already so much of a success as to warrant its repetition on any suitable case which may present itself. All cases of corneal blindness are not suitable cases for transplanting. Most of such diseased eyes are the sequel of perforating or sloughing ulcers of the cornea, with amalgamation of iris and cicatricial tissue, and with no aqueous chamber. The *sine qua non* of a proper case for operation is a perfect elastic membrane of Descemet, and a normal anterior chamber, filled with aqueous fluid. The lens and iris must also be intact, with a free pupil. For successful transplanting there must be a transparent membrane of Descemet as the foundation upon which to plant the graft. In preparing the eye by trephining, this membrane must not be perforated. It must remain perfect so as to retain the aqueous secretion within its proper chamber, and make a barrier, to prevent the displacement of the newly-placed corneal disk by the oozing away of the eye humors.

In the anatomy of the cornea the various layers of which it is composed are much more closely adherent to each other than is the innermost layer of corneal tissue to the elastic membrane of Descemet. In deep ulcerations of the cornea, this lining membrane of the anterior eye chamber will so draw upon its loose connections as to form a protruding hernia through the bottom of the ulcer. By the dexterous handling of Dr. Von Hippel's trephining instrument, layer by layer of corneal tissue can be cut through without disturbing the lining membrane. By watching the depth and the regularity of the trephining section, as is necessary in opening the skull, the cupping or turning up of the edges of the portion, as freed, will indicate surely when all the layers are cut through. Seizing the loosened plug with a forceps it is much more easily removed as a whole by traction, than brought away piecemeal. Practice on the fresh eyes of slaughtered animals will make the manipulation perfect. The rabbit's cornea is not so thick as the human, but as the whole thickness of it is added to the human Descemet's membrane, this addition with the slight pushing out of the membrane by the watery contents of the chamber. will bring the surface of the graft on a level with the anterior corneal surface, and insure the nice adaptation of the edges. The two serous layers when juxtaposed one on the top of the other adhere promptly and perfectly.

In suitable cases the transplanting of a disk of clear animal cornea into the centre of an opaque human cornea, is a legitimate surgical operation, promising to give useful vision to blind people. By useful vision I do not mean perfect sight. If sufficient vision is obtained to allow one to guide himself, and to move about in safety without the constant presence of a helper, it is well worthy of an effort to secure. Judging by my experience in watching the slow development of returning sight in my patient, I would say that the little but steady progress in seeing from week to week will, in the course of time, re-establish an amount of vision very enviable to those who have not it. Independence against compulsory dependence in any of the affairs of life is well worth striving for. Useful sight against no sight becomes a precious acquisition. In a certain class of blind persons the transplanting of clear corneal grafts seems to be the only way to attain this much-desired and longed-for blessing.—*Medical Record.*

ARTICLE V.

COPPER AMALGAMS.

As it has been stated in the professional journals, on the authority of some prominent dentists, that copper amalgam does not shrink, and as this was quite contrary to my own experience, published by this society some years ago, I have undertaken a more extended series of experiments, the result of which is now before you.

I have tried four modes of ascertaining the shrinkage, viz., stopping, inserted in celluloid, human teeth, glass tubes, and the specific gravity test. The latter is the only one I consider of much value, and it was introduced by Mr. Charles Tomes many years ago. The reason why the other modes are objectionable is that the co-efficient of expansion is not the same as that of a human tooth, glass probably coming the nearest.

We have here twenty-four experiments with tubes, twenty-one of which are with copper amalgam, while the remaining three are with silver tin alloy. You will notice that all the copper amalgams have allowed the red ink to pass them, while the silver alloy has shown itself to be fairly tight.

—TABLE OF SHRINKAGE.—

Specific Gravity List.

5	Specimens of	A	.65	Copper
1	"	" A	.54	
2	"	" B	.66	
4	"	" C	.61	
1	"	" E	.35	Silver Alloys
2	"	" F	.15	
1	Specimen of Silver Coin		.21	
1	" of Copper Amalgam and Silver Fillings		.48	

Masses tested weighed ten to twelve grammes, kept for six days at a temperature of one hundred degrees.

We have on the wall a table which I have drawn up of the absolute shrinkage of some nine or ten specimen of copper amalgam. When I brought before you similar tables some time ago, the accuracy of my experiments was doubted, because a very remarkable result was very fully shown. The earlier observations have, however, been quite corroborated by the more recent ones. You will notice that the amalgam does most of its shrinking within the first twenty-four hours, and that subsequently it seldom remains the same for any length of time, shrinking and expanding in a small but measurable quantity. To decrease the probable errors which might arise in this delicate form of investigation, I have used large masses of amalgam. In the earlier experiments I took less than two grammes, while in the present ones I used ten to twelve grammes. There is a fair amount of agreement in the shrinkage of different specimens of copper amalgam, 60 to 80 milligrams in 10,000.

TABLE SHOWING DAILY FLUCTUATION.

	November 6	November 7	November 8	November 9	November 10	Nov'ber 12	Nov'ber 18	Maximum Shrinkage.
No. 1 —	12.041	12.113	12.117	12.116	12.114½	12.114½	12.115	76
" 2 —	12.010	12.081½	12.085	12.087	12.085	12.088	12.089	79
" 3 —	12.015	12.087½	12.095	12.092	12.098	12.098	12.101	86
" 4 —	12.010	12.080	12.085	12.087	12.093	12.094	12.098	88
" 5 —	12.016	12.089	12.087	12.089	12.091	12.093	12.095	79

The above represents in milligrams the daily change, increase in weight, showing shrinkage.

As a matter of comparison, I have combined with this table similar tests, with the same alloy used in the tube experiments. You will see that the percentage of shrinkage in copper amalgam is from 5 to 7 per cent. of the mass, while with one of the two specimens of silver alloy it is a trifle over 3 per cent., the other a little more than 1 per cent., or, in other words, the best copper amalgam shrinks four times as much as the silver alloys used.

Now we come to the question of edge strength. This table shows the breaking strain of the several amalgams already alluded to. The breaking strain was obtained by placing small amalgam bricks, one millimetre in thickness by four in breadth and twenty-five in length, in a crushing apparatus I made for the purpose. These bricks are formed in a steel mould, which we have upon the table. Five bricks of each kind of amalgam were tried, and each brick gave me from five to ten breakages. You will notice the enormous difference that exists between the maximum and minimum, some bricks giving way at a pressure of less than an ounce, while others gave me as high as seven pounds. The difference in strength of the amalgam bricks is owing more to the manner of treatment than to the difference in kind. To get the best results, the mercury should be fully driven out of the mass before it is broken up in the mortar. If the ordinary directions are followed and the spoon removed from the heat on the appearance of the globules, it will be found that the amalgam is comparatively weak. It is better to drive off an excess of mercury by overheating and subtracting, subsequently adding what may be necessary to obtain the proper plasticity, than it is to allow some of the combined mercury to remain in the mass. The bricks on the table which are so weak are those made by underheating the specimens. One of the several specimens, both in the specific gravity and breaking strain tests, has been heated and worked over six consecutive times, and I find little, if any, injury resulting.

BREAKING STRAIN.

Bricks 1m. x 4m. x 25 m.

Kind	No. of Experiments.	Aver. Strain in ounces.	
A—	52 —	12 : 15-16—	Home made Copper Amalgam
A—	36 —	4 : 3-16 —	“ “ “ underheated
B—	28 —	33¼ —	“ “ “ 6th heating
C—	37 —	38 —	Copper Amal. from manufacturer
D—	30 —	34⅛ —	“ “ “ “
G—	26 —	41 : 3-16 —	“ “ “ “
G—	23 —	41 —	“ “ “ “
G—	20 —	34⅜ —	“ “ “ “
E—	27 —	55⅛ —	Silver Alloy from manufacturer
E—	23 —	69 : 13-16—	“ “ “ “
E—	24 —	23 : 15-16—	“ “ “ “
F—	35 —	63 : 3-16 —	“ “ “ “
F—	4 —	60 —	“ “ “ “
F—	17 —	58⅜ —	“ “ “ “

It will be observed that the silver alloys tested give a better result, not only as regards shrinkage but edge strength. It has been stated in the test books that silver is the expanding element of silver alloys. In this series of experiments I have only tried one specimen of silver, and that is standard or coin silver mixed with mercury. As you see, I fail to get any expansion but a considerable amount of contraction. Of course, a single experiment does not prove anything, but I hope to go into the subject more fully.

I have tried a curious experiment in mixing coin silver fillings with plastic copper amalgam. The gravity test has shown a diminution in the amount of contraction.

Amalgams of all kinds are very uncertain bodies; there is a molecular change going on, apparently indefinitely, and although it may not be sufficient to be a serious practical objection, yet it certainly must be one cause why amalgam fillings are not always aatisfactory.

The directions given by manufacturers of copper amalgam are that it shall be washed in dilute sulphuric acid and subsequently in water. You will see by the litmus paper that, when these directions are closely followed, the acid is not fully eliminated; after washing several times with water I wash with soap and water.

One word in regard to the manufacture. Copper amalgam is, as you know, made from the sulphate of copper; this is dissolved in water precipitated by the action of iron or zinc. I have handed round for your inspection two specimens, one done by aid of zinc, the other of iron. While the zinc one has a fairly good colour, the iron has produced a marked effect upon the other, the oxide of iron showing itself by its red appearance, One ounce of the crystals ought to produce an ounce of amalgam, costing sevenpence. The rapidity of precipitation is vastly increased by the aid of heat. I have not found by these experiments that the precipitation by iron gives, in any respect, better results than that of zinc, while the colour is certainly inferior.

Finally, gentlemen, it seems to me that it has been fairly proved that copper amalgam shrinks much more than some silver alloys, and that it has also less strength, but, at the same time, it is undoubtedly a material of very considerable value as an antiseptic in the stopping of teeth of poor structure.

Mr. W. E. Harding (Shrewsbury) asked whether it made any difference whether the copper was precipitated with iron or zinc?

Mr. Amos Kirby (Bedford) said that the results which he had obtained from his own experiments were different from those of Dr. Elliott. In all cases he found silver amalgams expand considerably; that precipitated silver and coin silver both expanded—when placed in the tube they either split the tube open or projected from the orifice. When measured with a micrometer some showed so much expansion as 1 in 25 of the diameter; the only way he could account for the difference between Dr. Elliott's results and his own was that he (Dr. Elliott) spoke of his silver amalgam containing a small amount of copper; he (Mr. Kirby) found that the addition of any other metal modified the action considerably.

Dr. Elliott, in reply, said, with regard to Mr. Hardings' question, he had never used iron, and therefore could not say. With regard to the expansion of silver, he was aware that it was an accepted opinion that it *did* expand, but he could only say that he had made some 300 experiments simply hunting for expansion and had not found it. Of course, he could only speak from his own experience; others might have been more successful. Then, with regard to what Mr. Kirby had said, the fact that he (Dr. Elliott) used silver and copper, while Mr. Kirby used silver only, would be, he thought, a possible, but not a probable, explanation of the difference of their results.—*Odontological Society, London Dental Record.*

ARTICLE VI.

A REACTION AGAINST ANTISEPTICS.

The movement against the use, except in a limited degree, of antiseptics, or, as they are now called, antimycotics, has received strong support from the investigations of Dr. E. Senger (*Deutsche Med. Zeitung*, No. 43, 1888), who shows the dangers of strong antimycotics in surgery, and the inutility of mild ones. Dr. Senger clearly states his position in a discussion following his paper (*London Medical Recorder*): All operations, he said, might be divided into two groups. In the first group strong antimycotics were applied, and these were the less dangerous operations. In the second group weaker solutions, particularly of boric and salicylic acid, were used. Antiseptics were introduced with the intention of killing any fungi that might have settled in the wound; in short, to disinfect. Antimycotic treatment was supported by the classical researches of Koch. Perhaps, however, it would be better, from the practical surgeon's point of view, to establish a basis by means of experiments in the disinfection of pus cocci. No doubt strong antimycotic solutions, such as sublimate and carbolic abid, destroy the staphylococcus aureus, but the weaker solutions do not effect this, though where they are employed there is a greater, nay a fatal, danger from a faulty antisepsis. Just in such cases in which strong solutions should be applied, they are inadmissible on account of the danger of poisoning; and again they are applied when they are much less needed. The theory and practice do not harmonize. To kill a pus coccus that has fallen into the abdominal cavity, washing with a four per cent. solution of boric acid is not sufficient, for you could let the man lie immersed in such a solution for five days and not accomplish that object. The same may be said of salicylic acid. . Yet the results of operationa in the abdominal cavity are excellent, and Senger believes that it is only necessary to wash the wound with sterilized water. He lays no particular stress on the common salt solution. The disinfection of a living tissue he considers to be impossible. Either the tissue is free from germs, in which case there is no need of an antimycotic, or it is infiltrated with pathogenic fungi, in which case it is impossible to destroy the fungi without at the same time seriously injuring the tissue. Disinfection answers admirably on dead objects, but in the case of living organs more importance must be attached to vital energy. Did not Virchow, at a time when it seemed as if the whole of pathology depended on pathogenic bacteria, especially direct attention to the conflict between the cells and bacteria? Surgical examination showed this in wounds in connection with syphilis, tabes, diabetes, and other exhausting diseases, so that, in spite of the stronger antiseptics, it was impossible to prevent purulence and purify the wound, because the energy of the cells had much abated and disinfection was impracticable. By all means let dead objects, such as instruments, the operating-room, etc., be thoroughly disinfected, but after the first incision no antimycotic whatever should be used. In how far these theoretical demands can be met in practice must be decided by those who have great opportunities of practice. The latter alone can determine the cases in which antimycotics are indispensable; but the general rule of avoiding their use should be observed.—*Medical Record.*

BROM-ETHYL AS AN ANÆSTHETIC.—Dr. Szuman recommends inhalations of brom-ethyl for short operations. The patients wake up rapidly and no vomiting or debility is produced. Medical aid is not required in its administration. It should not be used in protracted operations, or in drinkers, consumptives, and persons suffering from cardiac or renal disease. It is administered with the mask employed for chloroform anæsthesia.—Translated from *Therapeut. Monatshefte,* April and May, 1888

Editorial, Etc.

THE UNIVERSITY OF MARYLAND DENTAL DEPARTMENT.—Having noticed for several months the correspondence between Prof. F. J. S. Gorgas, Dean of the Dental Department of the University of Maryland, and Drs. Waters, Levy and others, I desire to add what little information I have which I hope will be of some interest to the readers of the JOURNAL. During the session of 1885 and 1886, I was a student at the Maryland University, Dental Department, and some time during the session, either just before or just after the holidays, I called at the office of Prof. Gorgas, the dean, in company with Mr. Robertson, of Canada, and Mr. Bemis, of Boston, all of us asking to be admitted to the graduating class on five years' practice and one full session which we were then attending, whereupon we were refused. The writer appreciated the firmness of the dean in carrying out to the letter the resolutions of the National Association of Dental Examiners, and the great interest he feels in the progress of dental education. At the next regular session, we all returned and graduated.

To the honor and credit of Prof. Gorgas as well as the other members of the faculty, I can truthfully say that no man labors harder for the interests of the dental profession than Prof. Gorgas, who is now the oldest man at the helm of dental education with one exception. Prof. Taft. I do not know Drs. Waters and Levy, nor do I know that their names have been sounded very far from their respective homes, nor do I know that my own name has ever gone beyond the limits of Fayette county, though I do know that the name of Prof. Gorgas has been dropped from the lips of almost every tongue to ring through the ears of nearly every nationality. I do hope that Drs. Waters and Levy had no intention of injuring Dr. Gorgas or the Dental Department of the Maryland University, though they have never said so, but if they did, the honors that Prof. Gorgas has so justly and faithfully born well up into the evening of life are more than two or three men can tear down.

W. N. MURPHY, D. D. S..
La Grange, Texas.

AN IMPROMPTU INTERO DENTAL SPLINT.—*By Dr. W. N. Murphy, La Grange, Texas.*—On August the 20th, G. W. Mc., age sixty-two, and rather fleshy and in robust health, was thrown from a wagon, loaded with three bales of cotton, one wheel running over his head, severing the left ear and dislocating the lower jaw on both sides, and breaking it in three places. Fracture No. 1 was through the symphysis and splitting out a little to the left side. No. 2 was just in front of the angle on the right side, and No. 3 was through the ramus on the left side, running diagonally from anterior lower portion to the posterior upper portion. A physician was called at once, who reduced the dislocation and dressed the ear, performing a successful plastic operation.

On the afternoon of the same day I went with him and another physician. I found only two teeth in the upper jaw—a canine and latteral—badly worn down, and five anterior teeth in the lower jaw, which made it a difficult case to determine the best procedure. I adopted the following simple treatment: First, made an outer splint of modeling compound to approximately fit all of the lower jaw, extending well up around the chin and far back around the ramus, hardened in ice water, and put in it a small quantity of plaster batter, and while the physicians held the parts in apposition I placed it in position, and when well hardened, I took a partial lower impression cup, one intended where the anterior teeth remain in the mouth, sawed the handle nearly off, so that it could be easily broken, then filled the cup with modeling compound of the hardest variety, just as hot as the patient could stand, and placed in position on the jaw, just as if I were going to take an impression, then brought the two jaws together so as to force the two teeth in the upper jaw into the excess of material that forced through space in the anterior portion o the cup, then hardened with ice water, and put on the necessary bandages. This remained until the tenth day, when the inflammation was so reduced, which necessitated a removal and a fresh one, which remained until the twenty-fifth day. On the morning of the second day the temperature was 102, after that it went down to normal and never went above that point. The patient was directed to keep the mouth well flooded with ice-cold lybrine water, which was rigidly enforced The splint removed on the twenty-fifth day and the parts were all and the writer saw the man at a barbecue on Novem second, and where he was doing full justice to an occa that kind.

CASE NO. 2.

October the 16th, Henry W., a negro boy, twe years of age, kicked by a horse, breaking the inferior m on the right side, between the cuspid and bicuspid, kn out the first bicuspid. Treatment very much the same 1, except a full impression cup was used, as he had al teeth except the one knocked out. Props of modelin pound were placed on top of the posterior part of c saddled over it, so as to prevent the mouth from closing, so as to give room for him to take liquid food. remained in his mouth until the twenty-ninth day, whe removed and the parts well united, and a good antago same antiseptic treatment as in Case No. 1. This m simple and practical method and one always at hand.— *Dental Journal.*

We are pleased to see that the doctor is putting int tical use some of the suggestions he received at the Uni of Maryland, Dental Department, of which he is a gr --EDITOR.

AN INCORRECT STATEMENT.—In the printed proc of the Louisville meeting, Aug 1st, 1888, of the "Natio sociation of Dental Faculties," appears the following sta made before the said Association by Dr. B. Holly relating to the University of Maryland Dental Departm

"It is a hardship to be bound by our resolutions competing institutions near by are untrammeled. The named (University of Maryland Dental Department) d require a preliminary examination, while Colleges of t sociation are compelled to do so."

If Dr. Smith had taken the trouble to examine the catalogues of the University of Maryland Dental Dep for several years past, he would have found that a preli examination is required of every student before he is regularly matriculated, unless he can show by a diploma or other satisfactory evidence that he possesses a good English education. This preliminary examination as to proficiency in English branches has been exacted of every student, who could not present such evidence, for years past, and the statement of Dr. Smith was wholly incorrect. Every requirement published in our annual catalogues has been strictly enforced. Application for membership has been recently made to the "National Association of Dental Faculties" by the University of Maryland Dental Department, and we trust that hereafter no incorrect statements will appear concerning its curriculum, which has always been as high as that of any other school in this country.

FERDINAND J. S. GORGAS, Dean.

Monthly Summary.

HOW SHALL THE SURGEON DISINFECT HIS INSTRUMENTS?—*By Dr. Hugo Davidsohn, (Berlin.)*—It has been demonstrated by bacteriological observations that wounds are less often infected by germs deposited by the air than by contact with the skin of the patient, the hands of the physician, instruments, sponges, dressings, etc. The author has endeavored to devise a method which shall insure the wound against infection from instruments, and at the same time be simple enough to find its place in the consulting room of the surgeon and the room of the patient. He found that disinfection with moist heat in a water bath, *i. e.*, boiling, is a reliable, perfect and practical method of disinfection. Care must be taken, however, that the heat penetrates to every place of the instrument, and that the air enclosed in the crevices of complicated instruments be totally expelled. Boiling for five minutes is usually sufficient, except in the case of instruments that are poor conductors, such as pessaries, hard canulas, when a longer time is required. During th time of boiling the water bath should be kept at a temperature of 100° C.; this may be secured if the col prevented from entering the bath by covering the ve allowing the steam to escape through a small opening.

Immediately after the operation, the instrum placed in cold water and all superficial pus, blood, matter brushed off. They are then boiled for five mi the water-bath, and after removal dried with a sterilize Before the operation, they are again boiled for five allowed to cool, and used without addition of antisep tions.

Although germs enclosed in pus and blood are no destroyed, since these substances are coagulated by hi peratures and then impede the passage of heat to the the above described method insures a complete destru all pathogenic organisms.—Translanted from *All medicinische Central-Zeitung, No.* 72, 1888.

TREATMENT OF CARBUNCLE.—*By Dr. R. F. We* author has treated five cases of carbuncle by scra erasion with prompt relief of the local and general sy

An anæsthetic was used in four of the cases; cocaine was tried and succeeded tolerably well (thoug deal of difficulty was experienced in introducing the the hypodermic syringe, on account of the tough cha the skin of the neck, which was rendered apparent more resistant by the inflammatory process going on slough was exposed either by the use of the scalpe Volkmann's sharp spoon tearing through the bridge forated skin until the yellow infiltrated tissues were The affected parts were scraped out in a very elabora ner, and their yellow prolongations, which were found of the cases to run up under the thick skin toward t were followed up and scraped out with smaller spoon as possible. Whenever a mass of such character was the skin or among the muscles it was scraped out in li ner. The bleeding is apt to be quite profuse, though easily checked by pressure. After washing out the parts with a sublimate solution (1 to 1,000) the whole cavity, and especially those prolongations referred to above, are carefully packed with strips of a thirty per cent. iodoform gauze, and iodoform freely dusted over. A sublimate dressing is placed over the wound and secured with a four-tailed bandage, two ends of which are wound around the forehead, the other around the neck and under the arms to the back, to secure everything in proper position.—*The Medical Record*, July 14, 1888.

THE SPREAD OF ANTISEPSIS.—The advocates of antisepsis have good cause for hearty self and mutual congratulation, in looking over the vast results achieved in the last few years. Time was, and not so very long ago, when this great reform was wholly confined to its inventor and his immediate friends and adherents. From this numerically small beginning it has spread, by sheer force of merit, until there is not a civilized country which has not felt its beneficial influence. Against it have been arrayed sectional hate and professional prejudice. Against it stood every man who was wedded to any other system of treatment whatever—every man who was unwilling to acknowledge that his past surgical life had, to a certain extent, been a mistake. Not the least of its opponents has been that compound of dislike and novelty, respect for old traditions, intense prejudice and laziness, which is called "old fogyism."

Against these and other obstacles antisepsis has made its way—not by compulsion, but appealing rather to the conscience of the profession; only needing a fair trial to be appreciated; never losing a true convert, until the completeness of its conquest is astonishing even to enthusiasts.

The advantage of such a uniform practice as this, both to profession and people, is incalculable. To the former it is a surgical volapuk—a common standard by which one's own work and that of his brethren can be estimated and compared; to the latter it offers a reasonable assurance that they will receive the best of treatment, no matter into whose hands they may fall.

By no means the least gratifying feature of this re
the stand taken by our brethren of the country and
towns. It was to be expected that hospital surgeons
where, and practitioners in larger cities, where the re
antiseptics were forced upon their attention, wo
promptly in to line if only as a matter of self protectio
the fact that men who are masters of the situation in th
localities, should voluntarily array themselves on th
side, is only another proof of their professional inte
and conscientiousness.

It has lately been the duty of the writer to take
cognizance of some twenty cases injured in a railroad a
They were treated by half a dozen physicians fro
different towns. In not one of these cases was there a
puration, nor any other ill result attributable to treat
Dental Register.

VIRCHOW ON ARTIFICIAL DEFORMITIES.—Wha
use, says Virchow, of introducing the principles and
ances of hygiene into the huts of the poor and ignoran
the scions of wealth, pretended intelligence, and
especially in the gentler sex, show their contempt of
by their dress and general wearing apparel. In days g
the speaker said, I have battled against the diabolical in
called the corset. but this crusade has been given up b
absolutely futile. The French shoe, with pointed toe
heel under the middle of the foot, is anothes fashion w
account of its detrimental influences on the body, ca
opposed too energetically. Even the modern stocking,
and symmetrical, is injurious to health, as it does not c
to the anatomical formation of the foot. To offset
notice that the professor of pathology at the Unive
Cambridge, Dr. C. S. Roy, and his demonstrator,
Adams, have appeared as champions of tight-lacing. M
pressure of the abdomen, they say, tends to assist the
ing of the abdominal veins, and experiment showed t
amount of blood expelled by the heart at each stro
greater, and that consequently the blood-supply of th

and spinal cord, the muscles and skin, was increased. This increased supply, they say, is useful when violent muscular exertions were being made; consequently tight lacing in women and tight waistbands in men are useful.—*Medical Record.*

DISINFECTION OF SURGICAL INSTRUMENTS.—*By Dr. Redard.*—The disinfection by heat is the best procedure; unfortunately every instrument cannot be passed through a flame. The immersion in liquids at a high temperature is only useful when the liquid is at least 110° C. and the contact very prolonged. The author's experiments show that catheters, trochars, mouse-tooth forceps are only sterilized by remaining at least three-quarters of an hour in a liquid of the temperature between 110° and 120° C: knives require only ten minutes. Disinfection by means of steam under pressure for fifteen or twenty minutes renders the instruments perfectly sterile.—Translated from *Revue de Chirurgie.*

OXYGEN NOT SO IMPORTANT IN RESPIRATION.—M. Brown-Sequard, who is nothing if not original, recently read a note at the Societe de Biologie in which he asserted that oxygen was not so necessary to respiration as had been supposed, and that carbonic-acid gas was not so poisonous as had been claimed. He had succeeded in keeping animals alive and comfortable in an atmosphere containing sixty per cent. of carbonic-aid gas, while he and M. D'Arsomal had been able to breathe an atmosphere containing twenty per cent. of CO_2 without any inconvenience. It is usually taught that air containing ten per cent. of CO_2 is poisonous. Brown-Sequard thinks that nitrogen is a very important element in respiration.—*Medical Record.*

VERDICT OF MALPRACTICE IN ADMINISTRAITON OF CHLOROFORM.—*The Lancet* states that a death from chloroform occurred in Sydney; and a lawsuit brought by the husband of the deceased resulted in a verdict of guilty, setting the damages at £200, on the ground that the anæsthetic was improperly administered.

BEEF, MILK AND PHTHISIS.—There can be no doubt that bovine and human tuberculosis are essentially the same disease, and that bovine tuberculosis may be transmitted to man by means of infected milk and meat. The necessity of prophylactic measures with this point in view has been urged by the "Record" for many years, and we are glad to see that the public press and legislatures have at last begun to recognize the fact. It is not probable, however, that the cow is the source of phthisical contagion in a large proportion of cases. The (pulmonary) phthisical age is from fifteen to thirty, after which milk ceases to be an important article of food. Further investigation, however, on this point is needed. —*Fx.*

OPIUM SMOKING.—The English colonial physician in Hong Kong refers in his last annual report to the opium-smoking habit among the chinese, and holds that it is hardly worse in its effects, when used in moderation, than tobacco smoking. The sudden abstraction of opium from those accustomed to smoke it causes no special physical disturbance. He has seen numbers of hearty old men who had smoked opium all their lives, yet were in good flesh and strength, enjoyed a fine appetite, and slept the sleep of the just. He maintains that the injurious effects of this habit are not to be compared with those of the abuse of alcohol.—*Ex.*

EXTIRPATION OF THE LARYNX.—Dr. Caselli reported a case of a young girl, aged 19, who had suffered for a year from difficulty in swallowing, and paroxysms of cough and dyspepsia which were at times so violent as to threaten life. An extensive epitheliomatous infiltration of the pharynx and larynx was found. The author removed the larynx, the pharynx, the base of the tongue, the two tonsils and all the soft parts of the palate. Recovery was complete one month after the operation with relief of all the symptoms.—Translated from *Gazette Med. de Paris*, 1888

UNIVERSITY OF MARYLAND.

DENTAL DEPARTMENT,

N. E. COR. LOMBARD AND GREENE STS., BALTIMORE.

HON. SEVERN TEACKLE WALLIS, LL. D., PROVOST.

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Assistant Demonstrators of Anatomy.

Continuous Gum Work will be Demonstrated by DR. J. W. MOFFITT.

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" Robert Y. Henley	Va	" Thomas H. Davy	Md
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" Arthur M. Rice	Conn	" Wm. B. Wise	Va
" L. D. Carpenter	Ga	" S. Dwight Hodge	Vt
" L. M. Cowardin	Va	" C. P. Baird	Tenn

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest an plete structures of the kind in the world. The Infirmary is lighted by large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays entire year for the reception of patients; and the practice for dental stud creased to such an extent that all the students during the past session abundance of practical work in both operative and prosthetic dentistry Books showing to the credit of many of them hundreds of gold fillings Infirmary patients, besides other operations. This means for practical ins already assumed such large proportions that the supply has been beyond the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth a facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thoroug instruction in the theory and practice of dentistry, the clinics in the Un pital enable the Dental equally with the Medical Students to become fami diseases and operations of Practical Surgery, excisions of jaw, parti tumors, cancerous or benign, of various parts of the buccal cavity; plasti for the restoration of cheek, lips, etc., may be mentioned as having bee class during the year. The induction of anæsthesia by means of differ ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in cannot fail to be of use to the student of Oral Surgery. Junior as w students are afforded every opportunity for practical instruction in both o mechanical dentistry.

The Lecture Halls in the University Buildings are large and well every facility will be afforded for practical and theoretical dental instruct strations in Anatomy, Physiology and Pathology, (for which an abundanc is furnished **free of charge**,) also form an important part of the regular Dissecting Room is large, well ventilated and lighted, and the Demonstrat cal Anatomy passes much of his time in assisting the students and di labors. **Dissecting Material is furnished in abundance, free of ch**

Qualifications for Graduation: The candidate must have attend courses of lectures of five months each in different years at the **Regula** Sessions in this institution. The following, however, will be considered valent to an attendance on one course of lectures in this College:—One c reputable Dental College; graduation in a reputable Medical College with dental pupilage in a dental infirmary. The student meeting either o requirements will have the privilege of presenting himself as a candidat ation at the end of but one Course of Lectures. The matriculant must English education; a diploma from a reputable literary institution, or ot of literary qualifications will be received instead of a preliminary exami students, both juniors and seniors, have equal advantages in operative and dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of sity of Maryland are required to attend but **one session** at the Universi Medicine prior to presenting themselves as candidates for the degree o Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of Octo will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in continues until the regular Session begins. Students in attendance on Session will have the advantages of all the daily Surgical and Medical C University.

The Fees for the Regular Session are $100, Demonstrators' Fees includ lation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting

For Summer Session, no charge to those who attend the following Wi

Beneficiary.—A Beneficiary student will be received from each S recommendation of the State Dental Society, on the payment of half o fees. Board can be obtained at from $3.50 to $5 per week, according to qu

The University Prize and a number of other Prizes will be specified i Catalogue.

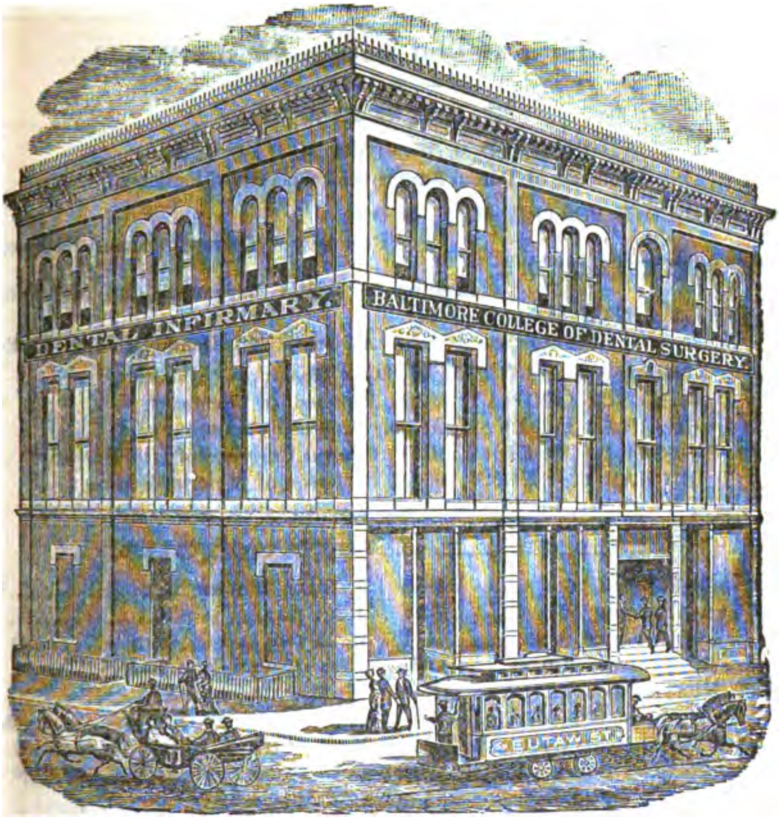
Students desiring information and the annual Catalogue will be ca full address and direct their letters to

F. J. S. GORGAS, M. D., D. D. S.

Dean of the Dental Department of the University of Maryl

845 N. Eutaw Street, Baltimore, Md.

Baltimore College of Dental Surgery.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This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following, The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations.

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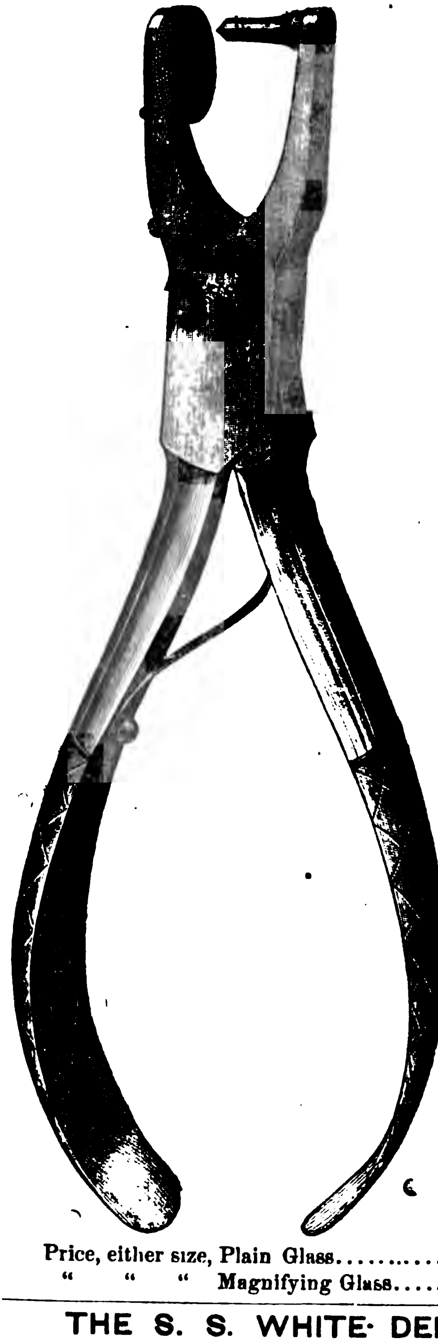

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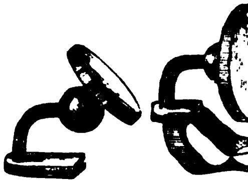

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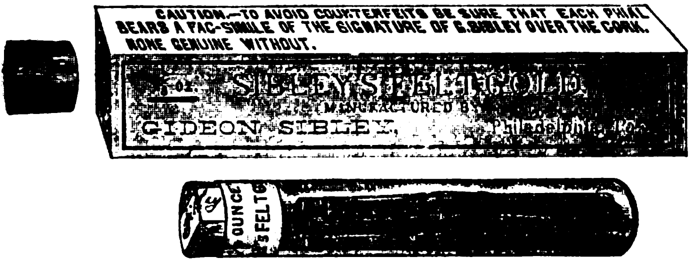
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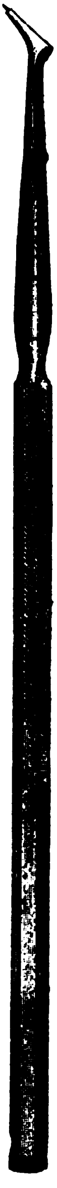

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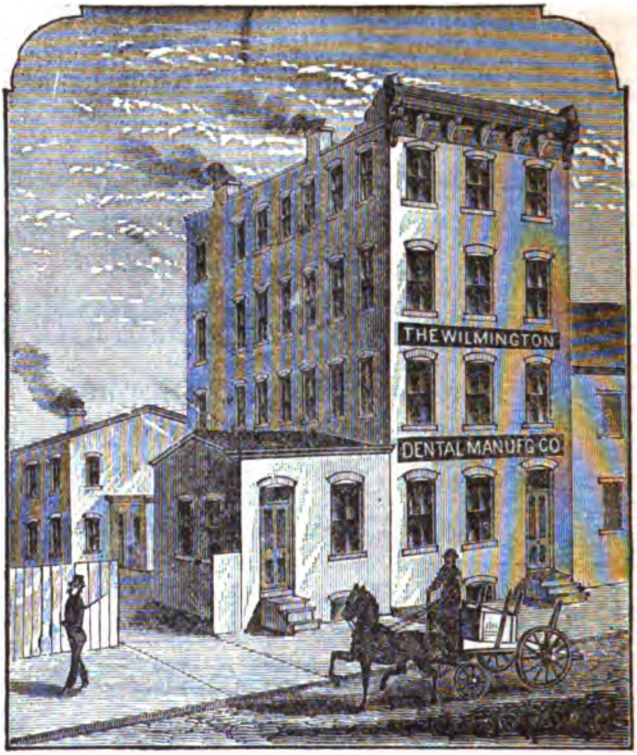

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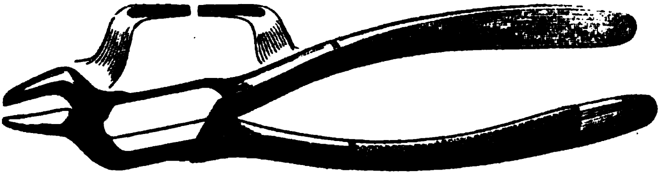

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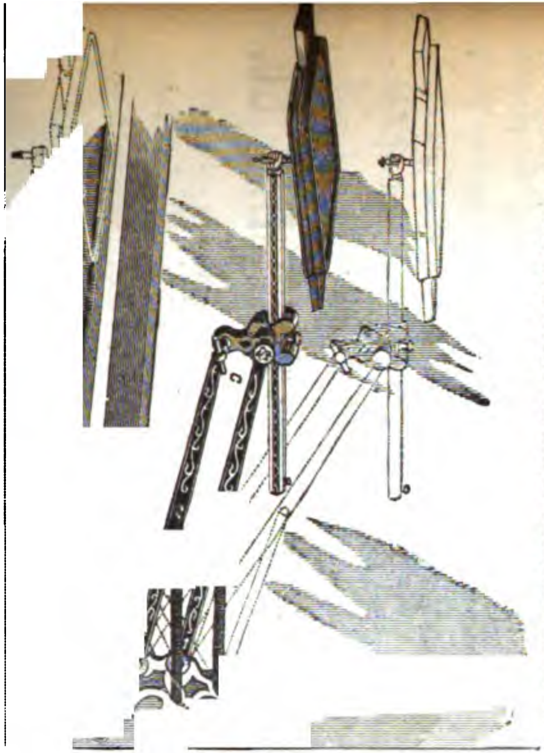

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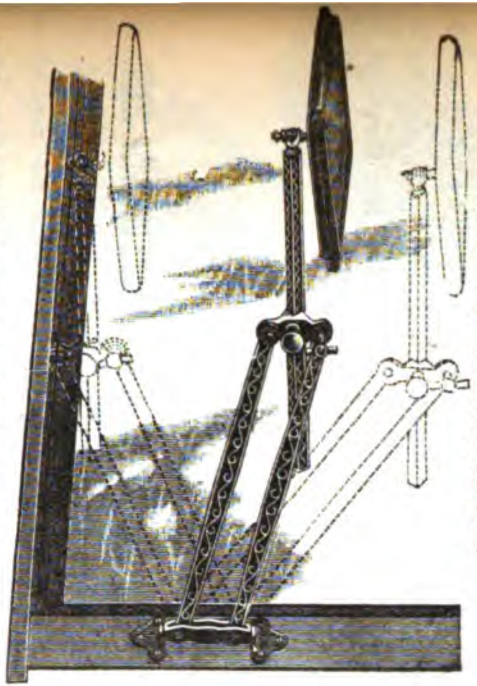

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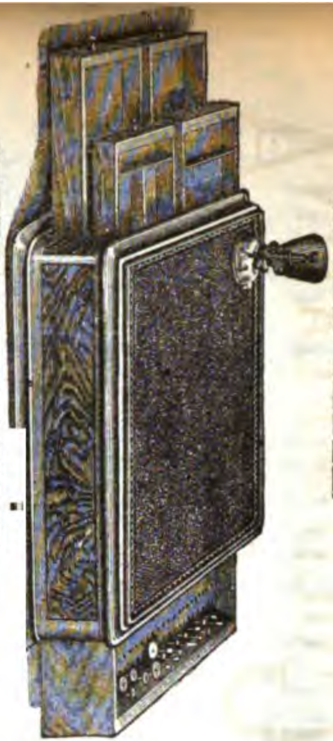

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Porcelain Teeth.

Beginning at Vienna, in 1873, where I made my first display, I have received successively at the Six World's Fairs the ***Highest Award for ARTIFICIAL TEETH;*** *this being the most important branch of my business and all that I exhibited.*

The greatest proof ever extended for Superiority to any manufacturer of ***PORCELAIN TEETH,*** *for their Strength, Adaptatio and Natural Life-like Appearance, was received by me through th Report of the Judges; Centennial International Exhibition 1876.*

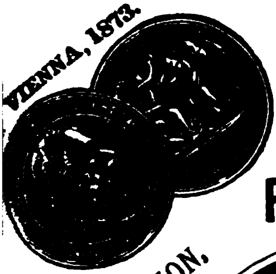
EXTRACT

FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XXIV.

"H. D. Justi EXHIBITED NOTHING BUT TEETH, but his display wa beautiful in the extreme. In color, translucency and texture, they were a that could be desired; they were a faithful reproduction of the physiologica characteristics of the natural organs, both to the individual teeth and relati to the entire set. Their conformation with reference to close and easy adaptation to the maxillary arch showed careful study of the needs of both patie and operator. Their various and numerous deviations from uniformity of a and outline, simulating the irregularities of nature, was so perfect that w in the mouth no suspicion of their artificial nature would be entertained. T disposition of tooth-material was so skillfully managed as to secure the great amount of strength with the least bulk; and the insertion of platinum pi was so arranged as to render their displacement an almost impossible accident."

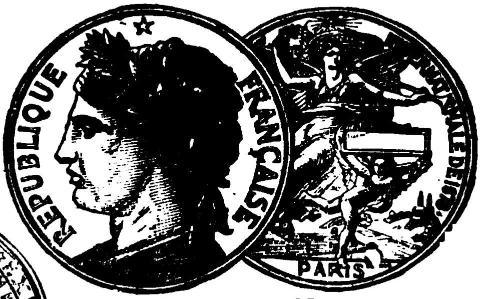
H. D. JUSTI.

SIX WORLD'S FAIR MEDALS
OF THE
HIGHEST ORDER OF MERIT
AWARDED FOR SUPERIORITY
—AT—
VIENNA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,
—TO—
H. D. JUSTI,
IN COMPETITION
WITH THE BEST MAKERS
—OF—
PORCELAIN TEETH.


VIENNA, 1873.

SANTIAGO DE CHILI
1875.

CENTENNIAL EXHIBITION.
PHILADELPHIA, 1876.



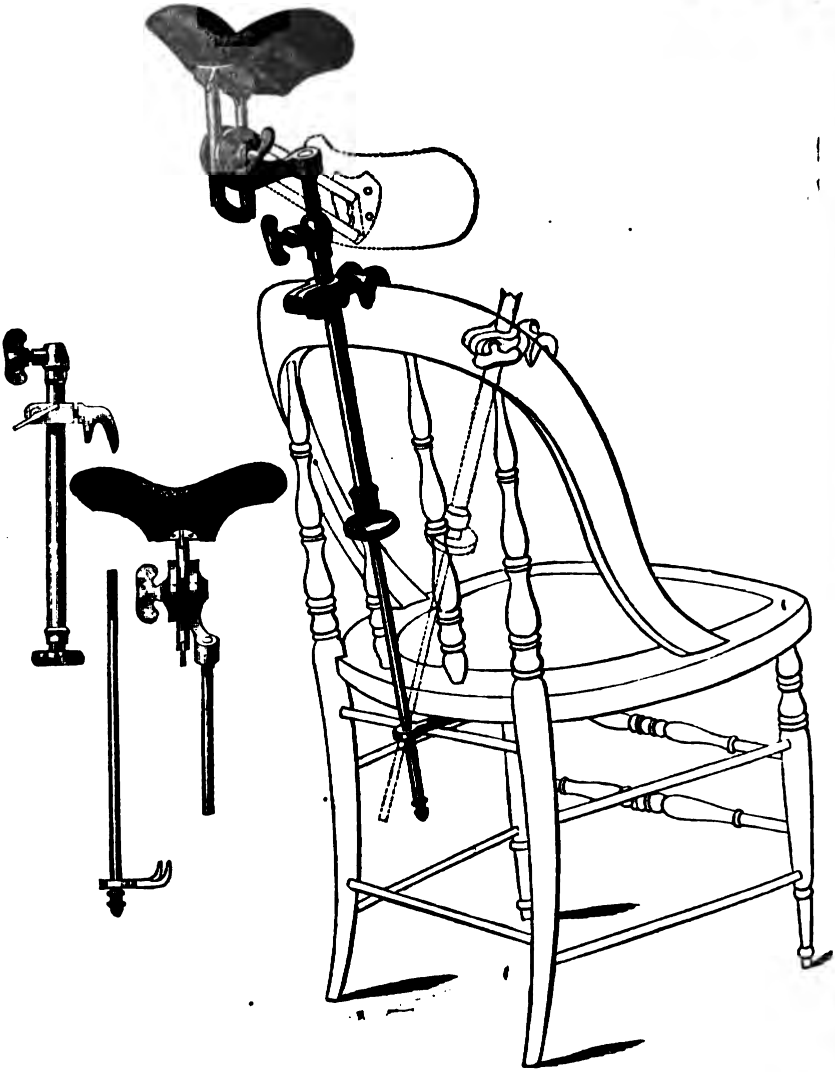
PARIS, 1878.

URNE, 188

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

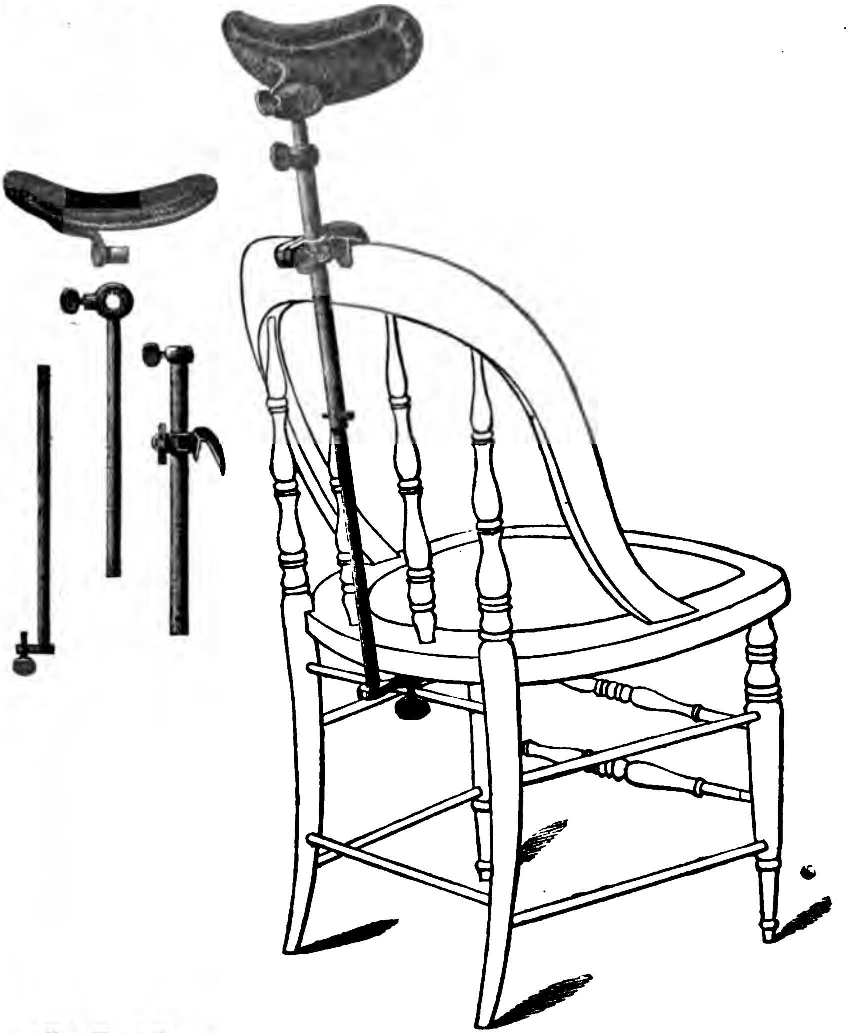
SNOWDEN & COWMAN,

West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

IMPROVED

Portable Head-Rest.

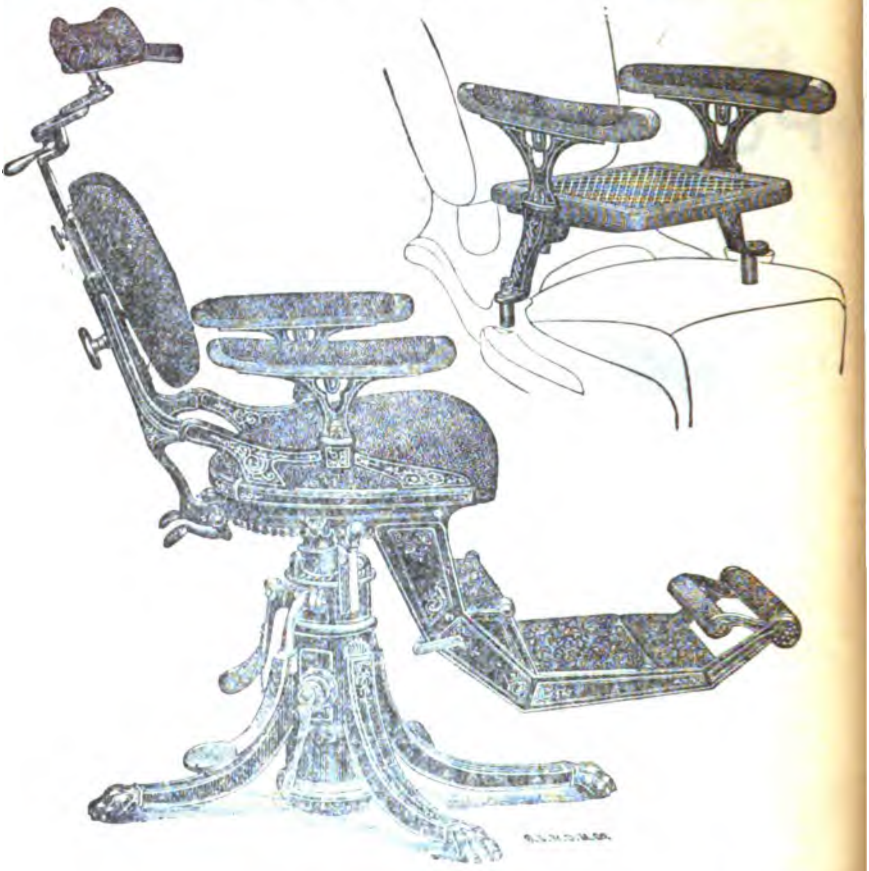


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 00.

SNOWDEN & COWMAN, 9 W. Fayette Street.

The Improved Wilkerson Chair.



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; **March** 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

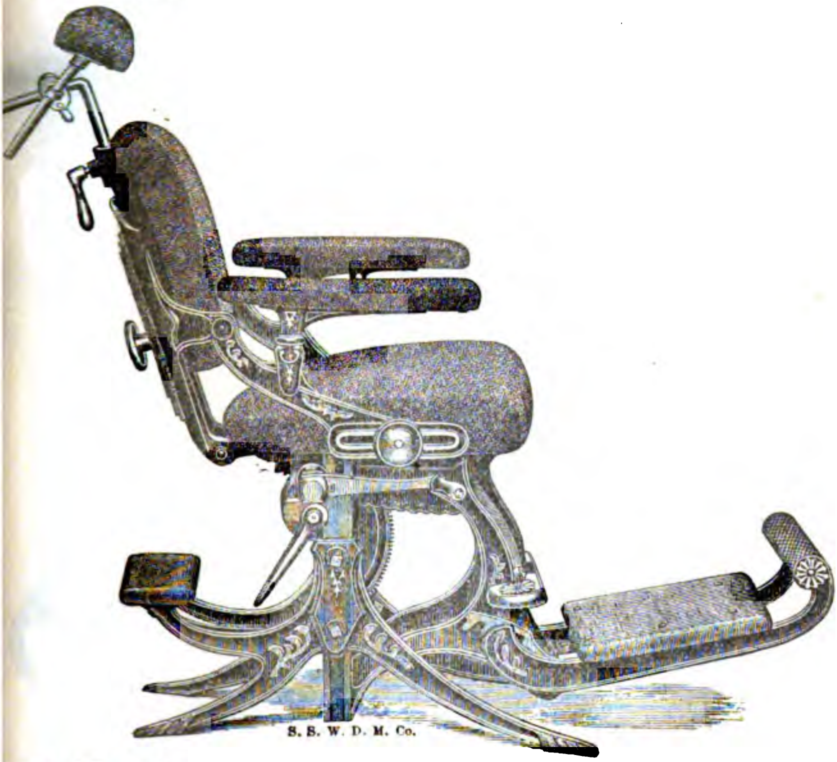
PRICES.

In best quality Green, Crimson, or Maroon Plush - - - - -	**$180 00**
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet - - - - - - - - - -	**200 00**
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match - - - - - -	**210 00**
In Crimson Plain Turkey Morocco or Leather - - - - - -	**180 00**
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests -	**210 00**

BOXING FREE.

For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

THE CYCLOID CHAIR.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

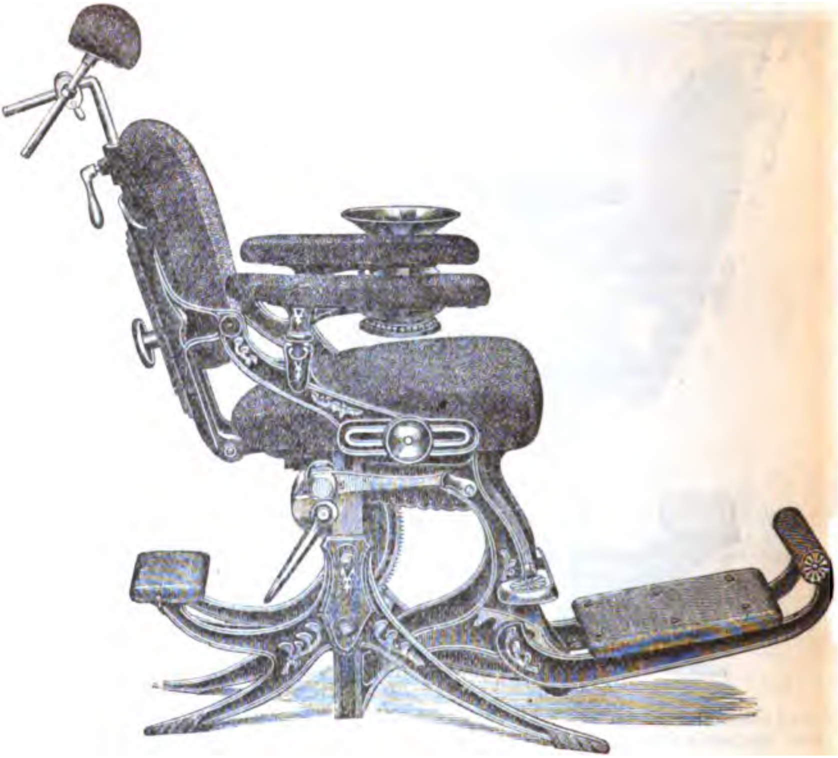
Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material,	- - - -	$ 80.00
" " " Best Quality Maroon or Green Plush,		95.00

For Sale By SNOWDEN & COWMAN.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$130.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

PRICE.

In Corded Upholstery	$105.00

We supply either style of the Morrison Chair, with or without Casters. When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

AMALGAMS.

Townsend's	$2.00	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	3.00	" "
Standard Dental Alloy,	6.00	" "
Lawrence's	3.00	" "
Arrington's	2.50	" "
King's,	3.00	" "
Sterling Amalgam,	3.00	" "
Chase's Alcohol-Tight,	3.00	" "
Olivers Amalgam,	3.00	" "
" White Amalgam,	5.00	" "

CEMENTS.

Roman Cement, best in the market,		$1 00
Agate Cement, in 1 oz. Boxes,		2,00
" " " ½ "		1.50
Weston's Insoluble Cement, ½ oz.,		1.50
Dr. Flagg's Plastic Enamel,	per Pk'g,	2.00
Fossiline,	" "	2.00
Metcalf's Cement,	" "	2.00
H. D. Justis's Insoluble Cement,		
1 oz. Package, 1, 2, 3, 4 Colors,		3.00
½ " " any above "		1.50
H. D. Justis's Acme Cement,		
One oz. Package,		3.00
Half " "		1.50
Dr. T. B. Welch, & Son, Art. Dentine,	per Pk'ge	1.50
" C. N. Pierce Phos. Zinc,	" "	2.00
" T. O. Oliver's Oxy Phos,	" "	2.00
" Smith's " Chloride,	" "	1.00
Houghtons's Os-Artificial,	" "	1.00
Poulson's Mineral Plombe,	" "	2.50
Dawsons's Mineral Cement	" "	1.50
Caulks's Diamond "		
Per Package, 2 Colors,		1.50
" " 1 "		1 00
Caulk's Hydraulic Pebbles, large Pk'ge,		2.00

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	"	2 25
Holdfast Rubber,	"	3.00
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Star Rubber,	"	3.50
Sam'l S. White's Bow Spring,	"	2.75
Whalebone Rubber,	"	3.00
Sterling Rubber,	"	3.00
Black Rubber	"	2.50

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$2 50
Sam'l S. White's	"	2.50

SNOWDEN & COWMAN.
9 West Fayette Street Baltimore

Steurer's Plastic Gold.

THIS is a chemically pure Gold in a plastic state without admixture of any foreign substance, and has been in extensive use for the past three years by dentists at home and abroad.

It is no foil or modification, but can be used as easily as an amalgam, and the filling can be made as dense by hard pressure as foil by the mallet. It has a *spreading quality* before it is completely condensed so that it will adapt itself perfectly to the walls of any cavity.

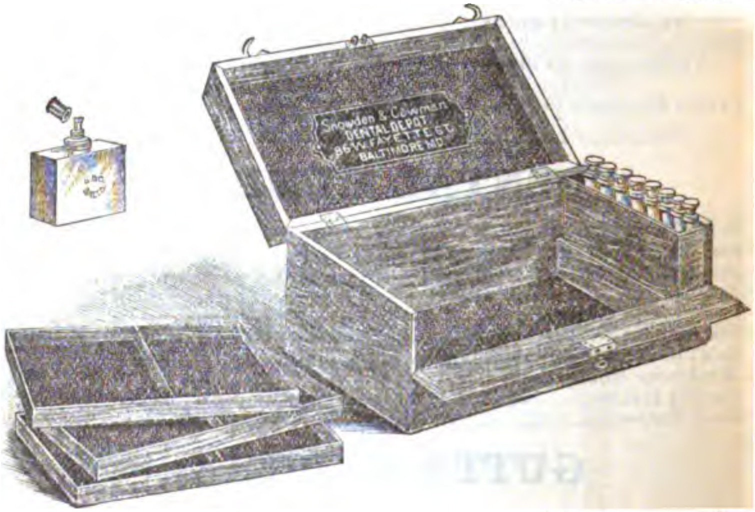
Beware of imitations which have sprung up within the last year on account of its great success. Be careful to see that it is in the shape of small square pieces, packed in bottles, and labeled *Steurer's Plastic Gold,* because the imitations, although they may apparently work in the commencement, do not make a solid filling, but gradually crumble away.

Price per Bottle, 1-16 oz, $2.50. Cash with all orders.

SOLD AT ALL DENTAL DEPOTS, OR

Dr. J. A. Steurer, 114 W. 19th St. New York City.

Student's Dental Instrument Case.


Snowden & Cowman
DENTAL DEPOT
86 W. FAYETTE ST.
BALTIMORE MD.

Manufactured and For Sale by

Snowden & Cowman,

Trade Supplied. 9 W. FAYETTE STREET.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
" " " 2. "	37 50
" " " 3, " (upright)	36 25
" " " 4, " "	37 75
" " " 5, " "	31 25
" " " 6, " "	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright " Leather Covered, " " "	10 00
" " Japanned, " " "	5 00
Gas Bag, 4½ gallons of capacity	2 25
" " 7 " "	3 50
Stand for 100 gallon Cylinder	4 50
" " 500 " "	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
" " 500 " "	35 00
Refilling 100 gallon Cylinder	2 50
" 500 " " 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	26	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 50	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 " " " "	3 75
20 " " " "	7 00
Pound	35

Boxing extra.

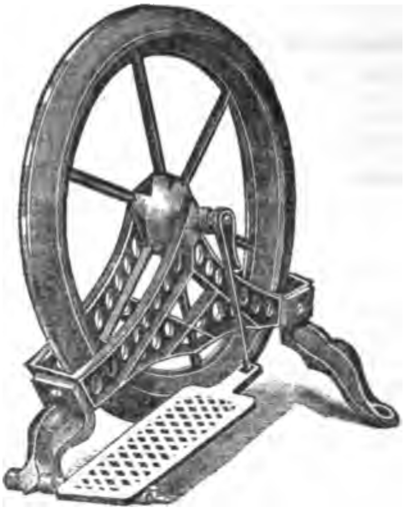
DENTAL PLASTER.

Barrel	$ 3 50
Half-Barrel	2 50
Quarter-Barrel	1 00
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

Manufacturers of the following articles :

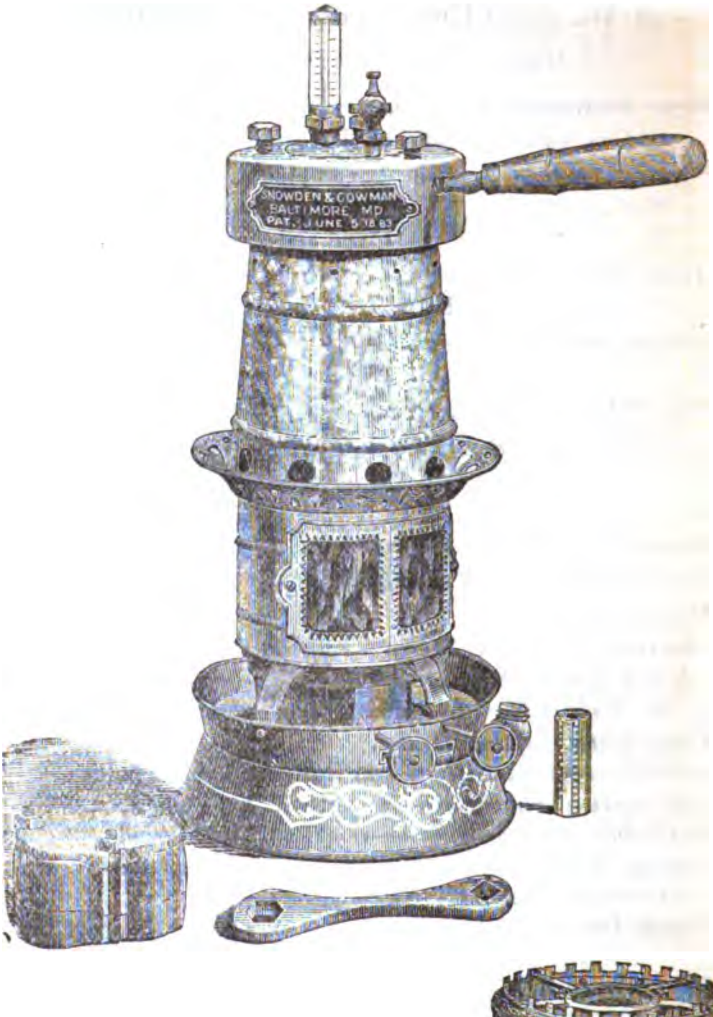
New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - -	15 00
" ' Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel, No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 5
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☛ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.60***

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

:o:

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right; and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

:o:

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—Howard W. Hoopes, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—Drs. Williams and Pennington.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. Duck, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—Thomas H. Davy, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—Bernhard Myer, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. Bierbower, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—Wm. B. Finney, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

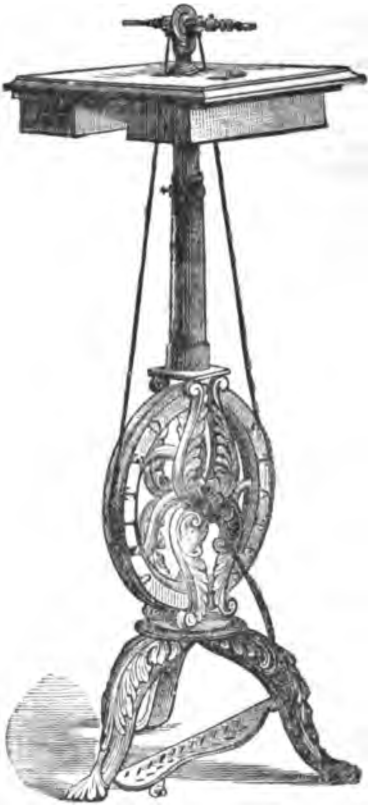
SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

UNITED STATES LATHE.



We offer to the dentist a most complete **FOOT LATHE** for grinding teeth and polishing plates.

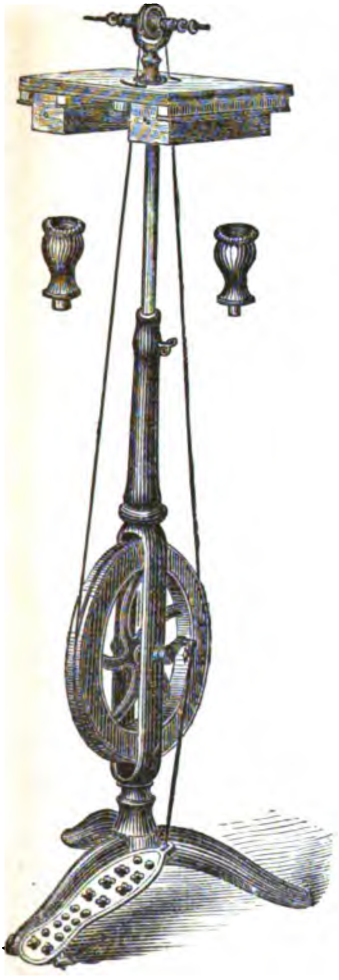
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut.	- - -	$16 00
" " " " Long "	- - - -	16 00
" Stand only, including Cord and Coupling,	- -	12 00

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory.* It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

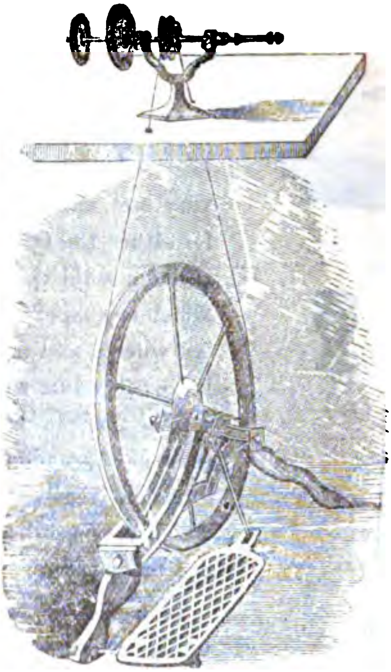
☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of	Lathe, as per cut, with two Chucks, -	$15 00
"	" with Socket Spindle, with two Chucks,	15 00
"	" with Extra Large Driving-Wheel,	16 00
"	Chucks, extra, - - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

The Diamond Fly Wheel and Lathe Head.



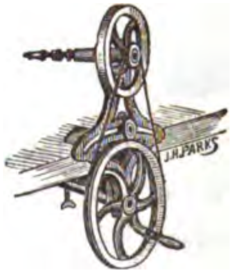
DIAMOND FLY WHEEL.

This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.
PRICE..$3 00

DIAMOND FLY WHEEL AND HEAD.

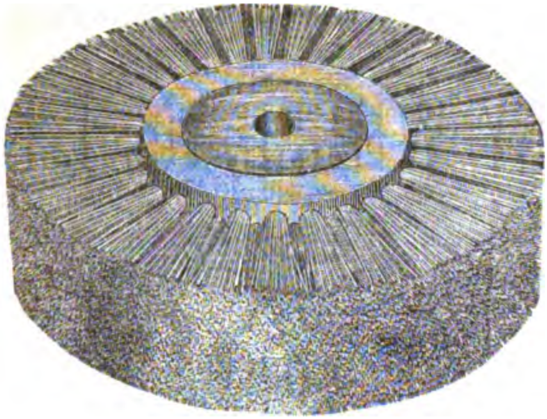
Complete, boxed..PRICE $14 0

QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightene by slots, and the lathe is silent; the spindle is of the best quality of stee with brass washers and two chucks complete. Weighs only four pounds
PRICE..$4 50

NOVELTY BRUSH WHEELS.



STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1¾	inches	diameter,	each	$0.10
"	4	1	"	"	"	1⅞	"	"	"	.14
"	1	2	Rows	"	"	1½	"	"	"	.15
"	2	2	"	"	"	1½	"	"	"	.15
"	5	2	"	"	"	1⅝	"	"	"	.18
"	6	2	"	Medium	"	1⅝	"	"	"	.18
"	8	2	"	"	"	1¾	"	"	"	.18
"	10	2	"	Soft	"	1¾	"	"	"	.18
"	7	2	"	"	"	1¾	"	"	"	.18
"	9	2	"	"	"	1¾	"		"	.18
"	11	2	"	"	"	1⅞		"	"	.20
"	14	2	"	"	"	1⅞		"	"	.20
"	13	2	"	Medium	"	1⅞	"	"	"	.20
"	19	2	"	Soft	"	2⅜	"	"	"	.25
"	22	2	"	"	"	2⅜	"	"	"	.25
"	21	2	"	Medium	"	2⅜	"	"	"	.25
"	20	2	"	Stiff	"	2⅜	"	"	"	.25
"	18	3	"	Soft	"	2	"	"	"	.28
"	17	3	"	Stiff	"	2	"	"	"	.28
"	26	3	"	Soft	"	2¼	"	"	"	.34
"	50	3	"	Soft	"	3	"	"	"	.37
"	30	4	"	"	"	4	"	"	"	.44

CONVERGING BRISTLES.

No.	16	3	Rows	Medinm	Bristles,	2⅛	inches	diameter	each	$0.28
"	15	3	"	Stiff	"	2⅛	"	"	"	.28
"	24	3	"	Medium	"	2¼	"	"	"	.34
"	23	3	"	Stiff	"	2¼	"	"	"	.34
"	28	4	"	Medium	"	3	"	"	"	.44
"	27	4	"	Stiff	"	3	"	"	"	.44

STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2	Rows	Stiff	Bristles,	1¾	inches	diameter	each	0.18
"	66	2	"	"	"	1⅞	"	"	"	.24

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2	Rows	Stiff	Bristles	1¾	inches	diameter	each	0.18
	65	2	"	"	"	1⅞	"			24

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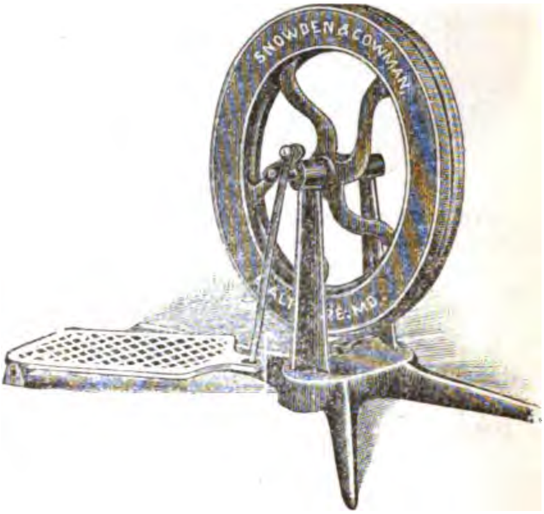
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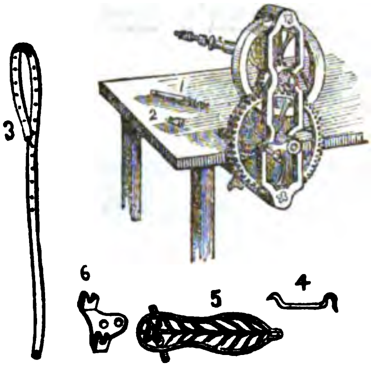

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Without Foot Attachment, - - -	5 50

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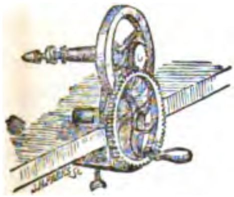
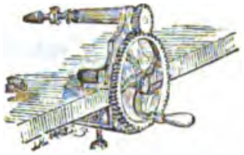


Hand Lathe.



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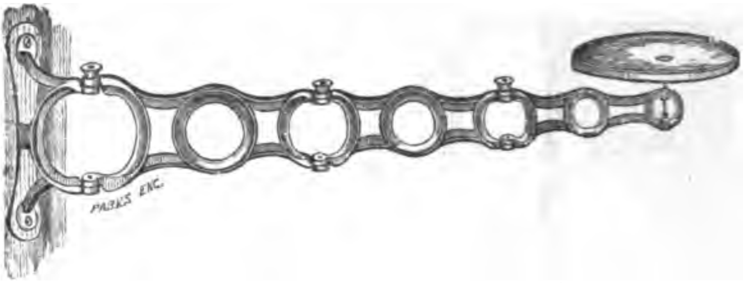

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Square " with drawers. - - - - - - - -	8 00

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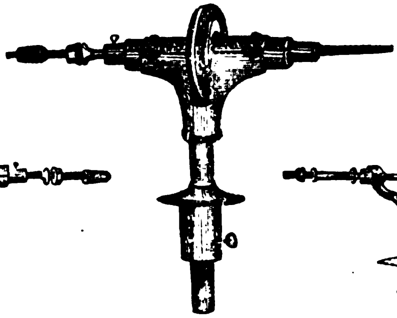
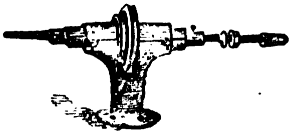
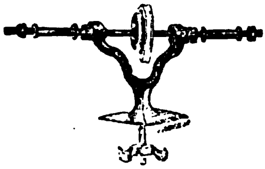


B.



C.



A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table..................................PRICE $5 00

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PRICE—Short Spindle (as per cut B)..................$4 00

" Long Spindle.................................. 4 00

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PRICE.................. ....$6 00

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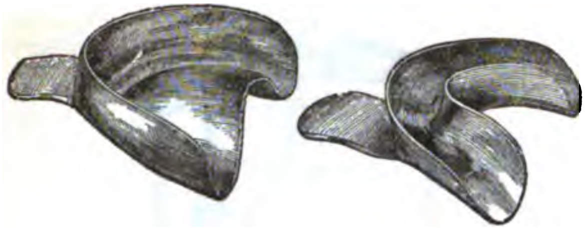

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LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

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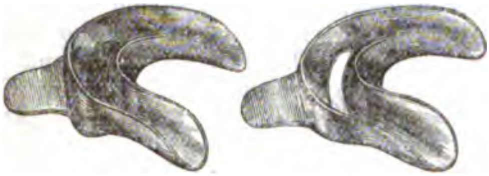

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OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

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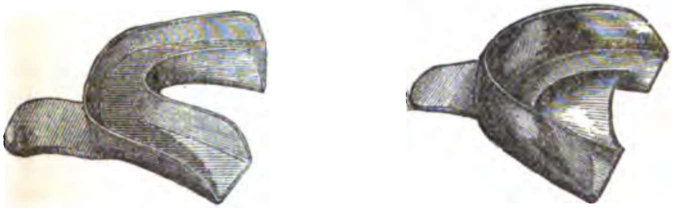

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FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
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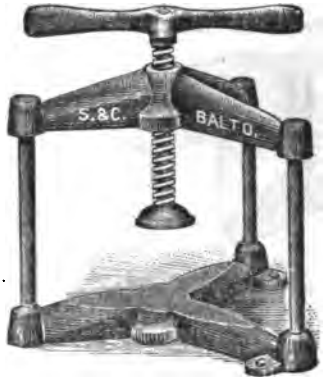

This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

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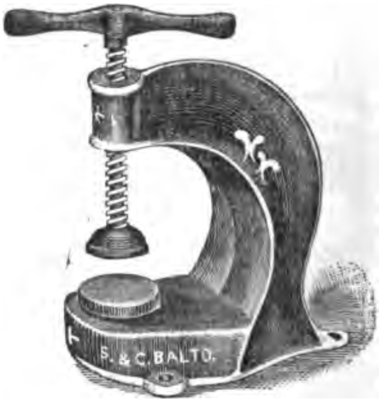

This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price - $1.50.

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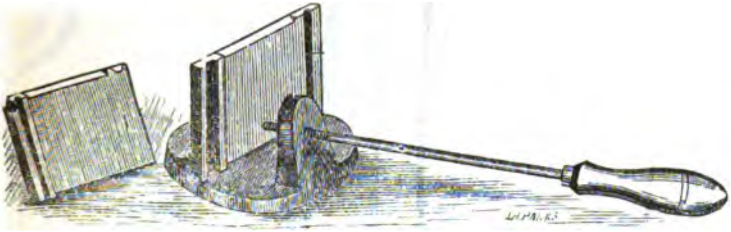

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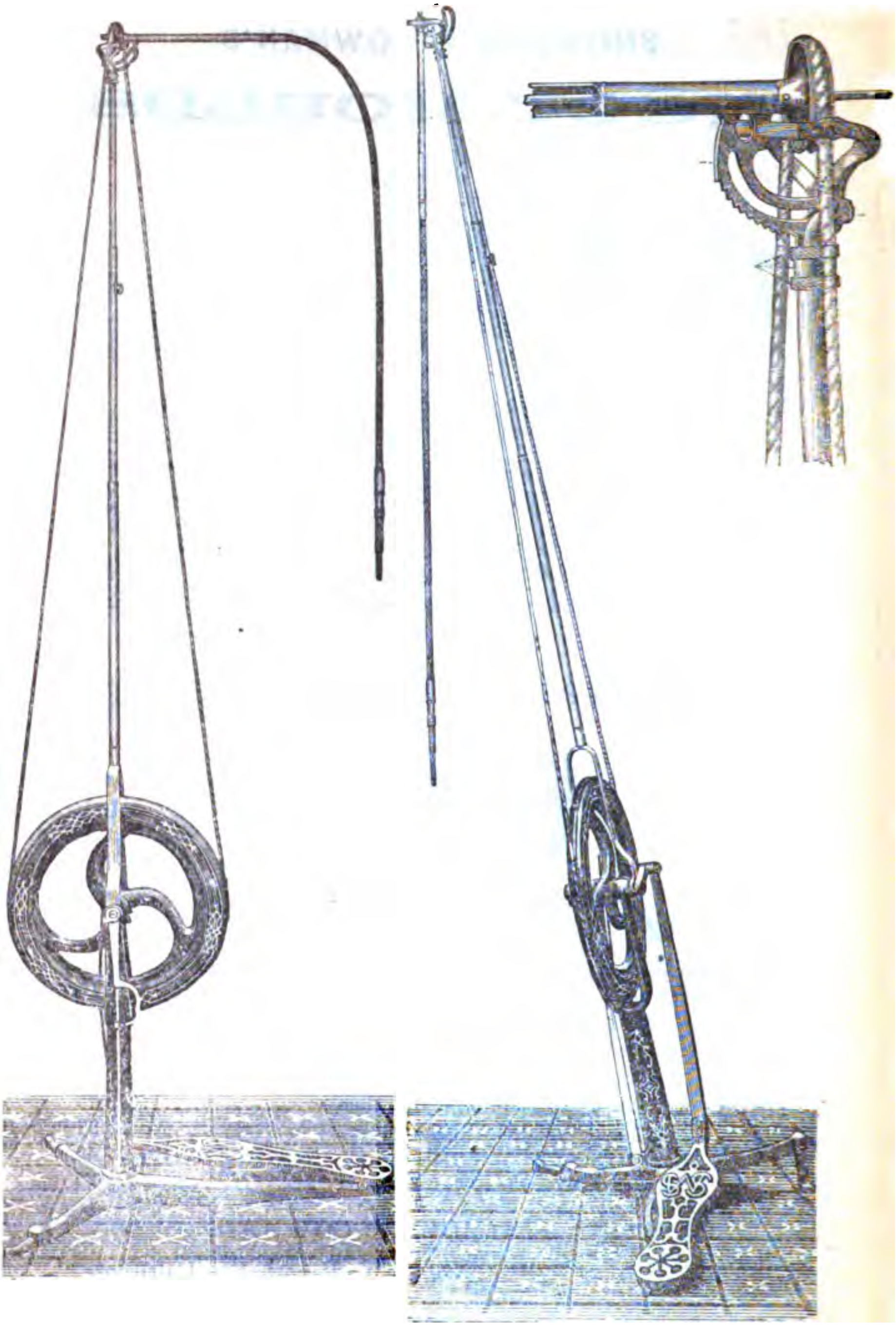

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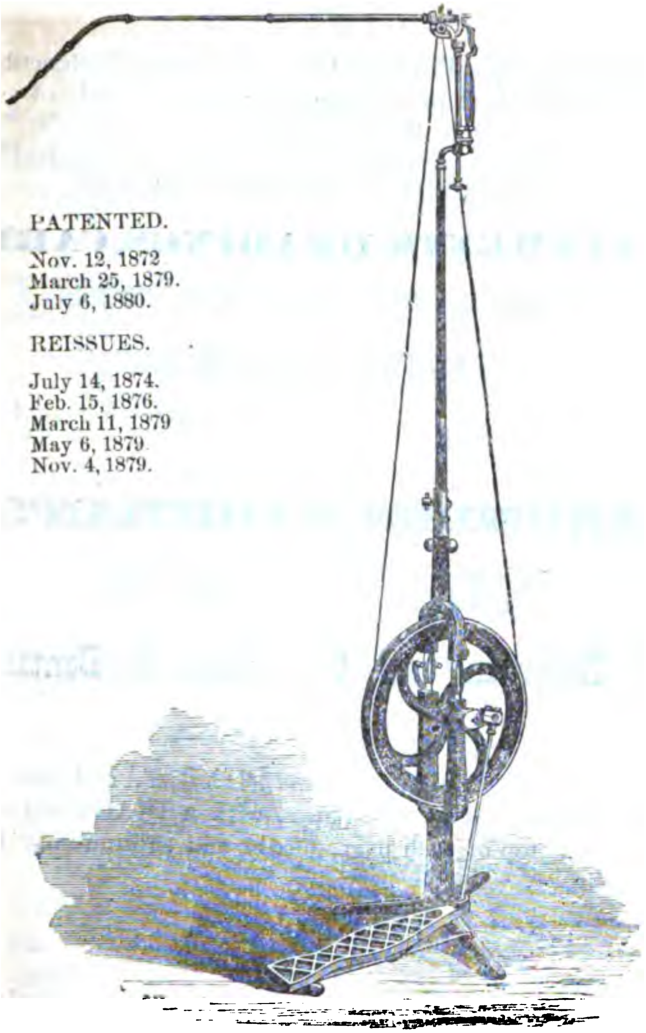

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March 25, 1879.
July 6, 1880.

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uently save money. To accomplish this result you
ust have the best Teeth in the market, and they are
ideon Sibley's Improved Artificial Teeth.
From this claim we except no make of Teeth, for-
ign or domestic, and it is daily substantiated by
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any of whom use these Celebrated Teeth exclusively.
ample sets, $1.00. For sale by all dealers. Sample
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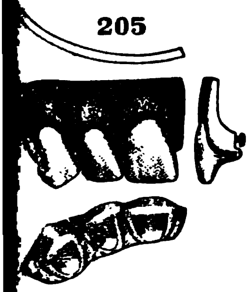
nd careful attention.

205



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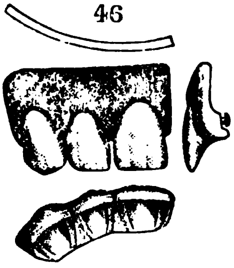

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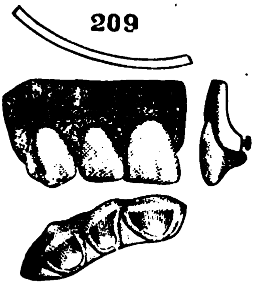
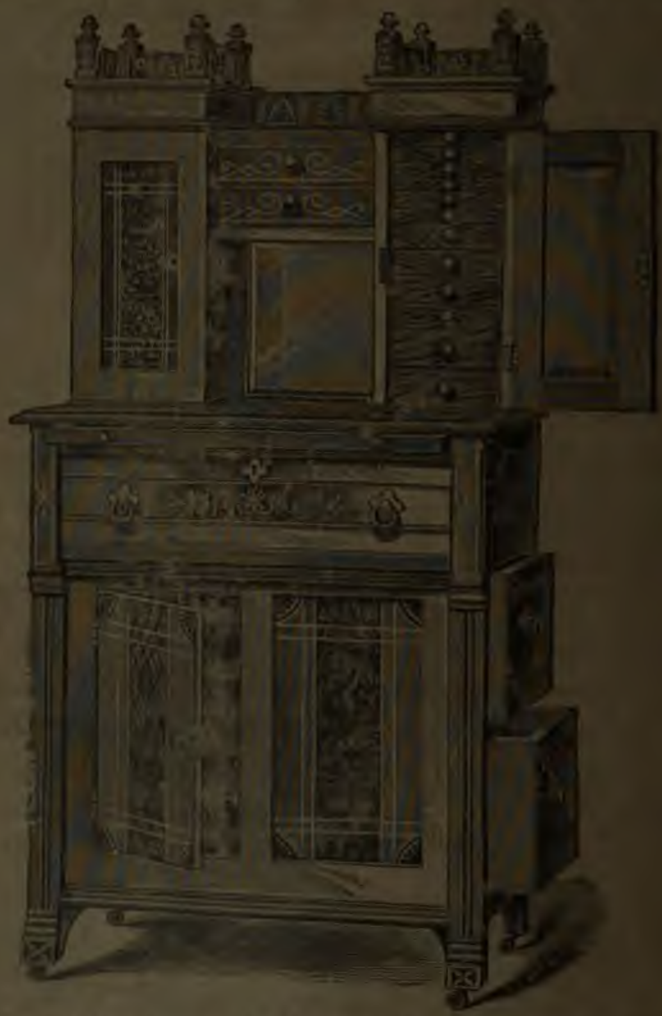


Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¼ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two portions above are 2 drawers, 10½ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 10½ by 1 inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

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FEBRUARY, 1889.

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VOL. XXII. THIRD SERIES—FEBRUARY, 1889. NO. 10.

ARTICLE I.

TREATMENT OF PULPLESS TEETH.

BY FRANK HAMPTON GOFFE, L. D. S. ENG. and EDIN.

[A paper read before the Birmingham Dental Students' Society.]

As it is the ill fortune of many to have teeth come under their care with either exposed or dying pulps, I thought that it might be interesting to put before you the various methods that have been recommended for their treatment.

The arguments for and against capping still go on, but it seems to me that there is a growing tendency to destroy all pulps exposed by caries—for a long time past I have given up trying to save exposed pulps.

Capping is very apt to fail from the fact that septic fluids have already been in contact with the pulp, and you cannot determine the date of exposure and injury; so when the pulp has been capped some time you find it becomes sensible to hot and cold fluids, then periostitis ensues. Our knowledge of the tooth structure has made us not so anxious to preserve the pulps, as we know that the dentine is in active communication with the cementum, which again derives its nutriment from the pericemental membrane, so that the tooth is not dependent upon the pulp for its life; but still we must remember that there is more work thrown on the vessels of the lining membrane after the death of the pulp.

Your first attention to a carious tooth is to remove the *debris* trom the cavity, then syringe it out with a weak carbolic solution. Now apply the rubber dam, which is one of the most important factors in antiseptic surgery for filling teeth, for by it the tooth is cut off from many sources of infection, and the drug used is not weakened or neutralized by the saliva.

Now, having the rubber fixed in position, you can remove the decay, and if the pulp is exposed, my practice is to wound it to induce hæmorrhage, treating it with carbolic acid to remove any coagulum, in order to allow your dressing to be in absolute contact with the pulp. In the case of the front teeth you can apply cocaine dissolved in carbolic acid for two or three minutes, when the nerve can be removed with very little pain.

In order to effect devitalization the usual dressing is Baldock's nerve paste. The following recipe is the one I generally use:—

R Acidi Arseniosi gr. xii.
Morphiæ Acetatis gr. ij.
Creasoti q. s.
Misce.

I find that the intense pain is usually allayed in about a quarter of an hour. I always leave the dressing in for two or three days; it is a great fallacy for dentists to insist on seeing their patient the following day, as the small quantity of arsenic used cannot possibly do any harm if it is sealed up securely; and it seldom renders a second application necessary. Occasionally, however, a small portion of undevitalized nerve still remains at the extremity of the canal, which the application of cocaine and carbolic acid will enable you to remove by means of a nerve extractor annealed in the spirit flame and passed to the apex of the fang; any remaining tissue should be removed with a Donaldson's nerve canal cleaner, subsequently drying with a hot air syringe.

The canal should then be enlarged with flexible drills or reamers, carefully avoiding forcing any *debris* through the foramen.

It need hardly be said that all the instruments should be quite clean and rendered aseptic; this can be done by wiping them with a solution of carbolic acid—1 in 40.

After cleaning the fangs, hot air should be injected for some time to destroy any lurking mico-organisms. A question now arises whether you should dress the fang before finally filling, which if you determine upon, one or other of the subjoined antiseptic drugs should be applied, viz., the essential oils eucalyptus or cloves, together with iodoform or the time-honoured carbolic acid.

The most powerful antiseptic agent we have is bichloride of mercury. A very good way of using it is a solution in alcohol 2 grs. to the ounce. According to Dr. Miller's table the antiseptic drugs act as follows:—

	Development of fungi arrested.
Bichloride of mercury - -	1 in 100,000
Peroxide of hydrogen - -	1 in 8,000
Iodoform - - - -	1 in 5,000
Eucalyptus - - - -	1 in 600
Carbolic - - - -	1 in 500
Arsenic - - - -	1 in 250

Here I might mention the new drug iodol. All the therapeutical properties of iodoform are claimed for it, but without its disagreeable smell or taste; it is a light fawn-coloured substance, which is almost insoluble in water, but freely so in ether or chloroform and olive oil; it contains about 90 per cent. of iodine.

Iodol can also be used as iodolized wax, which is a very good substitute for those who use iodoform and wax for fang filling, as it melts at a lower temperature and is more easily packed.

The system advocated by Mr. Coleman is to thoroughly clean out the pulp chamber; then apply a minute quantity of arsenic and proceed to fill the cavity in the ordinary way. It seems to answer well with some practitioners, as arsenic is a powerful antiseptic.

Another method is to mix together oxychloride of zinc and iodoform, then fill the fangs, using strands of wool to thicken it; this is apt to cause some amount of irritation for a short time, so you can substitute the oxyphosphate for the oxychloride of zinc. A solution of gutta percha and iodoform in chloroform, or the root fillings of gutta percha made by the S. S. White Co. are also useful as root fillings. I think one of the easiest to use is plaster of Paris mixed with iodoform and water, and worked into the canals with a few strands of wool; it seems to answer the purpose perfectly.

A ready but less perfect way of treating pulpless teeth is by the operation of rhizodontrophy; that is, after cleaning out the pulp cavity and fangs to cap over them, and then with a sharp instrument drill a perforation level in the gum into the fangs, thus leaving a drainage tube for the escape of gas or fluids.

If the foregoing plans are followed carefully, rendering all instruments, &c., aseptic before using, I think there is very little fear of any complications arising afterwards. As inflammation is most apt to occur during the first few weeks after filling, a few capsicum plasters should be given to the patient, with instructions to apply them in case of any irritation arising.

Teeth occasionally come under our charge with pulps already dead, without inflammatory effusion of the gum, but with pulps dead and an abscess formed or forming.

First thoroughly open up the pulp chamber, in order to gain direct access to the canals; loose *debris* should be washed out with weak carbolic solution, and the canals thoroughly cleaned with canal cleaners and a Gates Gliddon drill, which has the great advantage that it is a blunted drill and not likely to go through the apical foramen.

Peroxide of hydrogen should be pumped up to the end of the roots by means of a broach with a little twisted cotton wool round it until all odour has entirely disappeared.

Bichloride of mercury 1 in 1,000 can be used in the same way, alternately with the peroxide of hydrogen, or a mixture of the two may be used thus:—

Hydrogen peroxide f. ℥.
Mercury perchloride gr. ij.

In treating these cases it is very important to use the hot air syringe after every application of the hydroxyl.

The peroxide of hydrogen is a very unstable compound and so should be quite fresh and kept away from the sunlight, which decomposes it. It very readily gives off oxygen, being itself converted into water; this oxidizes or destroys all the micro-organisms and pus cells. Therefore it is advisable to continue pumping it up as long as the frothy bubbles appear; when these cease you can wipe the fangs out with chloroform and proceed to fill the roots with whatever materials you prefer. Peroxide of hydrogen is not a new antiseptic; it was introduced as a medicine by Dr. Richardson in 1858, and as an antiseptic for dental surgery by Dr. Coffin in 1883.

There is no question that the immediate treatment is gaining; and when the pulp has been recently destroyed with arsenic, and in cases of patients coming some distance, when a visit more or less is of importance, this treatment is invaluable.

If an abscess has already formed, the apical foramen should be enlarged and hydroxyl and perchloride of mercury pumped through the foramen until there is no discharge of pus down the root and no froth appears; this will usually occupy about ten minutes. If the canals are too small to admit the broach, it is far better to enlarge them till you can pass your instrument, as you must have clear openings to effect a perfect cure.

Immediately the roots are quite clean and aseptic, I proceed to fill them, as I think very little is gained by dressing the root time after time. As soon as the canals are rendered aseptic, the cause of the abscess is taken away, and with proper treatment, the cause being removed, the effect can also be quickly remedied.

The best and quickest way, if all the pus cannot be brought away through the root, is to open the abscess and remove the diseased part through the alveolus.

Formerly, this caused considerable pain, but now it can be performed quite painlessly. I take 1 gr. of hydrochlorate of cocaine and dissolve it in carbolic acid, and inject it with the hypodermic syringe. Dr. Vian pointed out that carbolic was itself a good local anæsthetic, and with this solution I have had very good results.

After waiting three to five minutes the alveolus should be perforated and an opening made into the abscess; this cavity should be syringed out with peroxide of hydrogen, and if the abscess is very large or chronic, I plug the sinus with lint soaked in carbolic.

At times great benefit will be derived from a little medical treatment, the sulphides having a great effect on suppuration; the best of these is the calcium sulphide, which will often give the patient considerable relief.

I have put before you, as well as I am able in such a short paper, the various methods for the preservation of teeth after the death of the pulp; the retention of the roots in a healthy state will become no doubt of greater consequence as they are utilized more and more for mounting crowns and bridge-work.—*The Dental Record.*

ARTICLE II.

THE HANDS.

BY MRS. M. C. NEWHAUS.

[With remarks and quotations from M. D'Arpentigny, translated chiefly by E. Heron Allen.]

The hand is the member of all members. Its importance has been especially commented upon, by all writers, historians, and soothsayers since the world began. There is scarcely an event in our lives but the hand has been the principal agent. Its beauty is beyond description. What fine mechanism, what curious construction, and what wonderful responsiveness to the most delicate sensibility. The joy and sorrow, the tragedies and mysteries that emanate from it. Through it we live again with all the poets, philosophers, and scientists of old. The most dreaded and disgraceful punishment in olden times was the disfigurement or severing of the hand. Superstition has also run riot in regard to hands as the itching of the palm which was supposed to foretell wealth, etc. Heron Allen, in his last work, tells of some of the old superstitions about the hands and nails, and cutting of them. The The ancient dogma which we all know of "cutting on Monday you cut them for health, cutting on Tuesday cut them for wealth, etc.," and one and all agreed that "A man had better never been born, than have his nails on a Sunday shorn." The Romans performed this operation on a day especially set aside for the purpose.

We all naturally have a preference for small beautifully molded hands, and would be inclined to think they indicated great delicacy of mind and heart; but strange as it may seem, some of the most cruel and relentless characters in history possessed such hands. Charlotte Corday had beautiful delicate hands—which hardly suggested strength or courage enough to drive a dagger to the heart of Murat.

The importance and significancy of the hand is plainly seen all through life. Slander can be overlooked, rudeness ignored, but the raising of the hand against another is an insult beyond forgiveness. The ancient Persians used to keep their hands folded beneath their robes when in the presence of their ruler as a sign of absolute submission. What greater mark of humility than an appeal made with clasped hands!

A maiden in "giving her hand" yields up her liberty.

D'Arpentigny writes "That there are hands which naturally attract us, and there are hands which excite in us repulsion. I have seen hands that seemed covered with *eyes*, so sagacious, so penetrating was their appearance. Some, like those of the sphynx, suggest an idea of mystery, some betray folly and strength combined with activity of body; others again indicate laziness joined to feebleness and cunning." And again he writes "Large hands, particularly if they be hard, are a sign of physical strength, and as the Greeks could not conceive beauty without strength, a large hand was to them a great beauty. It is a matter of common knowledge that the Greeks, whatever their station of life, never rode when they might walk, did their own cooking, and otherwise performed a great deal of manual labor which to-day would be looked upon with aversion and contempt." Large hands have an inherent love of detail, and is its especial attribute. Now, little hands, on the contrary, affect not only the large, but the colossal. The pyramids and temples of Egypt and India have all been built by people with the most delicate hands in the world.

In an article on Palmistry written some months ago I briefly enumerated the types of hands without any special analysis, as the work dwelt more particularly upon the lines of the palm. Nearly every one in asking me to examine their hands ask, "How can I tell if my hand is larger or smaller than that of another? How is the expression any different than my neighbor's." It would seem difficult to answer, and one can only distinguish these curious differences by constant study of all hands that present themselves. There is nothing that indicates character any more distinctly than the hand, to a student of this science. Like the human face, we never find the hands of two persons exactly alike. D'Arpentigny gives seven classes or types of hands.

1. The Elementary, or Large-Palmed Hand.
2. The Necessary, or Spatulated Hand.
3. The Artistic, or Conical Hand.
4. The Useful, or Square Hand.
5. The Philosophic, or Knotty Hand.
6. The Psychic, or Pointed Hand.
7. The Mixed Hand.

The Elementary hands are large and thick with little suppleness and hard in texture, and belong almost entirely to those who live by manual labor and whose lives are governed by routine. They are heavy and sluggish, with dull imagination—yet the influence of these hands is unquestionable, especially in our own country where the farmer lays the foundation of our wealth. Just a moment's thought will bring to our minds the lovely gardens and parks, grand boulevards and walks which these heavy and clumsily handed people perfect so beautifully. Superstition is strongly marked in this type and wizards and spectres are often supposed to be seen by these persons. Strong and powerful as is this type it is a strange thing that when illness attacks them they succumb readily, from the fact no doubt that they are lacking in resources and strength of will.

The Spatulated hand, by this term we mean hands which present a flattened out appearance at the end and resemble a *spatula*. This hand indicates resolution, energy, resource for resisting physical ills, love of life and strong intelligence. All the greater workers, explorers, navigators, were of this type. The fingers are smooth and indicate love of comfort and elegance, of a material, rather than of an artistic kind. The Scotch and English greatly favor this hand, but in Russia it is more commonly found. Persons with spatulated hands are more Platonic than personal in their love, more prone to Protestantism than Catholicism, because the Catholic appreciates, to a higher degree, the *sentiment* of religion, but the *idea* of religion is more highly developed among the Protestants, as the spatulated hand is more material than spiritual, more practical than sentimental. Englishmen who very commonly possess those hands are adroitly commented upon by Bulmer Lytton, who writes of these people perhaps a little severely, but in the main he is correct.

"The English make business an enjoyment and enjoyment a business; they are born without a smile; they move about in public places like so many easterly winds—cold, sharp, and cutting; or like a group of fogs on a frosty day, sent out of his hall by Boreas for the express purpose of *looking black at one another*. When they ask you 'How do you do?' you would think they were measuring the length of your coffin. They are even, it is true, *laboring to be agreeable*; but they are like Sisyphus. The stone they roll up the hill with so much toil runs down again, and hits you a thump. They are sometimes polite, but invariably uncivil. Their warmth is always artificial, their cold, never, they are stiff without dignity. They offer you an affront, and call it "a plain truth," they wound your feeling and tell you its manly "to speak their minds," while they profess to abhor servility, they adulate the peerage." Henrich Heine, the great German poet and cynic; possessed very delicate hands, greatly in contrast to the practical spatulated hands of the English, whose coolness and lack of sentiment made him antagonistic—he writes as follows in his Pictures of Travel:

"Kind Nature rarely disinherits her creatures. While she has denied the English the profession of much that is beautiful, and lovely, has given them neither voice for song nor taste for real enjoyment, and has endowed them with leather ale pouches, instead of human souls. She has given them in compensation, a large share of civil liberty, the art of comfortably arraying their homes, and William Shakespeare,"

But of this type is much good to be said, some of the most wonderful, and powerful manufactoriss in the world are the work of these hands. In America we find a great variety of types—as we are a people of many nations.

The Conic or artistic type is modified in its formation, having three different characteristics. Supple, with small thumb, showing love of beauty and form; large, with thumb thick and short, it seeks power and wealth. Napoleon had a hand of this kind. The last variation in this type has a large palm and thumb while the texture is hard, showing great tendency to fatalism. *All* these variations are governed by inspiration, and are lacking in mechanical arts. The French soldiers who are enthusiastic and emotional and are moved by eloquence, have the Conic or artistic hands. The phlegmatic German soldiers show more of the elementary type. The English the spatulated. To the latter *war is a trade*, a profession, where pay is its object. The Americans where *all* types are represented fight with the endurance, enthusiasm, and courage of all. The love of persons with artistic hands is more sensual than that of the square or spatulate types. There is also a lack of order and prudence Spatulate handed persons view things as they are, the Conic artistic as they *imagine them to be.*

The Square or useful hand. It is of medium size, knotty fingers, square tips, large thumb with ball well developed, palm hollow and texture firm. It indicates perseverance, foresight, order and conventionality, which characteristics are entirely absent as you will observe from the conic type. The square handed people live by theory and convention; feel severely, and only act upon such impulses as their reason accepts or permits. They have continuity above all things. They expand to intelligence, but can not elevate themselves, they live not in idea, and believe only what they see with the eye, or can reason to their satisfaction.

The Knotty or philosophic hand. We find two distinct formations of this type. The sensualists and the idealists, the former deriving ideas from *external influences*, the latter from an *inner* consciousness. *Outside* of the army the Germans nearly all possess the ideal philosophic hand, lacking in animation, silent and monotonous. Science predominates over art. Theory more than action. In France the sensual philosophic prevails. Persons with this type of hands are fond of analysis and find a reason for every sensation. No idea is adopted unless thoroughly examined from every point. They are guided by reason and not instinct and claim great religious liberty, are scoffers of superstition, and enjoy all pleasures moderately. We now come to the Psychic or pointed hand. It is the most rare and beautiful type of all, and is usually small in comparison to the rest of the body. The palm is medium, fingers smooth, with delicately marked joints and ends of fingers long and drawn out to a decided point, the thumb is small and elegant. Some writers of romance have claimed that the Psychic hand belongs only to old aristocratic families. Although scarce, it nevertheless exists among the *lower classes*. These beautiful hands are unfitted for manual labor and are impractical. Everything in art attract them, and every emotion which moves the soul. In Asia this type is in the majority, whence springs the essentially religious and poetical spirit of the nations. There is a strong tendency to spiritualism, they live preeminently by soul, rather than heart. Milton, Swedenborg, Goethe, Victor Hugo and George Sand had Psychic hands. The highest lyrics, the greatest romances and most intense poems were given us by such hands. The last hand we shall class is the

Mixed type, and is usually a very complicated one, having a tendency to resemble all types. The intelligence which is revealed by a mixed hand is one which partakes of the nature of intelligences attached to each of the types represented, and are the lights and shades of all. Intermediary ideas, sciences of administration, commerce, etc., are the chief characteristics of these hands, also an aptitude for many pursuits and often never excelling in any one thing. The mind is more versatile than powerful, more amusing than instructive, and a thorough education wonderfully benefits this type of hand, which is thick and supple with large conic fingers and large thumb. In Heron Allen's translation of D'Arpentigny, he gives in conclusion some remarks upon the hands of women, and as I am indebted to this writer's translations for most of this article, I will quote them.

"The tendencies of each type are, among women, the same as among men, only those which belong to the square and spatulate types, are much less imperious and intense among women, by reason of the suppleness of the muscles than they are among men. The man *creates*, the woman *developes*.. Men have *principle*, women *form*. The former makes *laws*, the latter *morals*. 'The man is more true than the woman,' writes St. Martin, 'but she is better than he. The man is the *mind* of the woman, and she is the *soul* of the man.' Then again he values things with his brain, she with ner heart. Few women possess the knotty, philosophic hand, as few are gifted with the talent of combination, they have more tact than science, more quickness than conception, more imagination than judgement." Women usually range under two categories; those with large thumbs and those with small, the former more intelligent than sensitive, the latter more sensitive than intelligent. For clear sightedness and consideration marks the hand of the large thumbed woman, while those with small thumbs are not endowed with a high degree of sagacity. I regret very much that there is neither space or opportunity to illustrate the above various types of hands, but hope the reader will find the above explanations sufficiently intelligible to develope an interest in this fascinating science.—*Cincinnati Medical Journal.*

ARTICLE III.

DO BENIGN TUMORS BECOME MALIGNANT?*

BY JOHN B. HARVIE, M. D.
—Physician to Troy, N. Y., Hospital.—

[Read before the Troy Medical Association, Dec. 4th, 1888.]

There is no doubt but that the different growths which are found in other structures and parts of the body are capable of affecting and producing similar results in the breast. At first sight it would seem probable that a benign and unmalignant formation would never result in anything more than what it originally was. That a formation or neoplasm would remain and continue as it primarily began and never transform or change into anything else. When we have the poison of measles sown in the system we expect to find measles resulting from said contamination and not diphtheria, consequently if we have a simple non-malignant tumor of the breast, "or any other part of the body for that matter," we do not naturally look for the subsequent development of something which is essentially different in character, microscopical appearance and result as regards the patient.

Benign tumors of the breast have, until recently, been brought under one general class and named adenomata. Recent observers have, however, dissected out the subject fairly well, and have placed each species under a head of its own, according to the microscopical appearance and tissue of which it is composed. To the practical surgeon, however, a diagnosis is not always very easily arrived at. To distinguish between malignant and non-malignant growths, even in a situation so favorable for manipulation as in the breast, is a problem which occasionally taxes the ingenuity of the most experienced, and it will be found impossible to avoid error at times. It may be laid down as a rule, however, that the nearer the structure of a growth approaches the normal physiological tissue the more probable is it that such a formation is non-malignant, and the wider the channel the greater the possibility of malignancy.

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* Do tumors of the breast, which may be classed as benign, ever become, by metaplasia, malignant; and if so what tumors are subject to that change?

In regard to the development of neoplasms whether they are of epithelial or connective tissue origin the question arises must they originate and increase by proliferation of the tissue which they represent, or can a cell of one series give origin to one essentially different, or may the result of multiplication be modified by the presence of cells of different systems on the same principle as if we plant certain kinds of vines in the same bed, such as cucumbers and citron we shall have resulting a fruit which is altogether unlike either one or the other.

The metamorphosis of the connective tissue corpuscles by what is known as epithelial infection or inoculation has been regarded by some as a very probable theory. How this infection might arise and what might cause it is as mysterious as the transformation which takes place in the fruit.

In regard to the origin of tumors the theory which stands out most prominently, and the one most generally accepted, is that of local origin. The most recent theory, that of Cohnheim, demands an accumulation of dormant embryonal cells as such a cause. Cohnheim supports this view by experiments, in which he transplants fœtal tissue into a mature animal with the result of excessive development of that particular tissue. Same practised after birth gives a negative result. Growth possesses for its active element cells and cells are propagated only by segmentation or pre-existing cells. Tumors have failed to be propagated by inoculation. Experiments have been tried time and again on individuals and animals without showing any result. Cohnheim thereupon returns to this theory that the morbid growth must spring from embryonal cells, and that as ovum, by segmentation, gives origin to different varieties of normal tissues, different in function and structure, so we may have produced abnormal varieties of tissue, with like divergent manifestation of function. It is further assumed that the elements from which a tumor arises are of an indifferent character, and that the result of the growth, what its character, etc., may be, is influenced in some way by the condition and circumstances at the time.

What part predisposition takes in favoring the development of simple neoplasms of the mammary gland is probably disputable. Family history, however, plays so important a role in the predisposition to the development of other affections that it seems as though it must be accepted as an important factor. The married state and the physiological transformation which takes place in the breast during lactation and pregnancy offer very slight, if any, contributing cause. Lactation, however, in predisposing to inflammatory and sometimes suppurative changes in the breast, may be followed by areas of circumscribed hardness, which may consist of cicatricial connective tissue holding in its meshes more or less glandular structure. Such a mass might, however, be classed with such as result from injury.

It seems almost probable that growths which are inclined to be innocent in character are, as a rule, confined to the connective tissue, and those which are malignant to the glandular portion of the breast. The growth and development of innocent neoplasms takes place within a capsule and does not involve the surrounding tissue; that of malignant formations the very opposite.

In considering the subject of why benign tumors of the breast are liable to become malignant by metaplasia, I should say that the lipomata and certain cysts are recognized as being uniformly benign, and that certain other growths, which are regarded as innocent, may, under certain circumstances; take on malignant action. What the occasion is which excites the intruder to change his coat and practically become a horse of another color is still a mystery.

Benign growths sometimes assume very great dimensions, but never affect any alteration in surrounding tissue except that of displacement of parts and atrophy through pressure. They are essentially local in their development.

Sometimes tumors, by their peculiar behaviour, answer all the requirements of a malignant growth, while structurally they retain the proper arrangement to entitle them to a position within the harmless fold. As to what tumors may become malignant by metaplasia I should regard those known as fibroma, a fibrous tumor, myxoma or mucous tumor, and adenoma, a glandular tumor, as those which are most likely to take on cancerous action. That form known as chondroma, a cartilaginous tumor, bring very rarely, if ever so.

All tumors are subject to degeneration, decay and death. They may inflame, suppurate and die, resulting in a mass of chronic inflammatory tissue, penetrated by sinuses from all points and absolutely refusing to heal. And it is an indisputable clinical fact that those growths which are earliest in reaching maturity are the first to show signs of decay, and it is further shown by experience that the tumors which attain maturity most rapidly, even though they be ever so benign at the outset, are more prone to undergo a cancerous degeneration. The slower the growth the more likely will it be to remain benign.

If a tumor be purely of a fibrous character, its growth will inevitably be slow, and the possibility of any malignancy may almost positively be disregarded, but if such a growth should be the seat of vegetations or fibro-cystic in character then it increases in dimensions much more rapidly and indeed is sometimes a strong rival of carcinoma itself.

The disposition of fibro-cystic growths to take on malignant action must not be overlooked. It is possible that a neoplasm might remain innocent throughout its entire structure for many years and become the subject of cancerous deposit. Erichsen reports such a case. The tumor had existed more than twenty years before removal having commenced at the age of twenty-eight, but after extirpation cancerous matter was found at the bottom of some of the cysts, which, as the constitution was uncontaminated, was doubtless of recent formation, and the surface of the fungus was epitheliomatous.

The neoplasm known as myxoma or mucous tumor appears so seldom that its appearance is regarded almost as a curiosity. Its growth is somewhat rapid and is disposed to recur after removal. On account of the limited number of these neoplasms which have been recorded and the imperfect history of the cases, it is not known what percentage, if any, assumed malignant action.

The adenomata are also very rare growths. This species is probably more prone to undergo cystic degeneration than any other form of tumor. It is also more liable to recur after removal than any one of the simple neoplasms. Its progress is usually very chronic but occasionally assumes great rapidity of growth, thus almost simulating malignant disease. Although recurrence after removal in this form of neoplasm is quite great, still infection of neighboring organs seems to be very exceptional. When fatality occurs it seems to have been super-induced altogether on account of the local lesion or repeated operations and exhaustion in consequence rather than through any constitutional infection. Gross lays considerable stress on the liability of this form of tumor to become carcinomatous and considers the epithelium of the acini as the starting point.

Indurations of the breast in consequence of pre-existing mastitis are supposed to be a fruitful source for the development of malignant disease. Although these cicatrical masses may remain benign during the period of usefulness of the breast, still, when the age for the development of carcinoma arrives, and especially if any cachexia exists, the foundation of cancer is apt to be laid. Since the fact has been admitted that some forms of benign growths may assume malignant action it would stand almost to reason that any simple neoplasm which is liable to degenerate or take on irritative action may, providing the idiosyncrasy exists, become cancerous.—*Montreal Medical Journal.*

ARTICLE IV.

DENTAL HYGIENE.

BY DR. R. H. FITCH, PEKIN, ILLINOIS.

[Read before the Central Illinois Dental Society.]

In his great work on "American Nervousness", Dr. Beard says in substance that nervousness, which he has previously described as "nervelessness" or nerve exhaustion, is the reason for the early decay of the teeth; that Americans are the most nervous nation in the world, and have the worst teeth of any nation, which is the reason that American dentists are the best dentists in the world.

This statement of Dr. Beard is confirmed by the reports of the school inspectors of Paris, who find that the scholars in the public schools suffer from an accelerated decay of the teeth from the date of their entrance. Since my attention has been called to this phase of this subject, I have noted the general fact that among individuals great mental anxiety, as well as long fevers, caused especial sensitiveness of the teeth. It does not matter from what cause this nervousness proceeds, the effect is constant. I have noted this effect on the teeth among the students of our graded public schools, and especially in the case of those who were trying to do two years' work in one.

This American system of mental gormandizing, called education, is a constant menace to the most careful work of the dentist. The mental dyspepsia which follows this overloading of the brain deranges all the functions of nutrition alike. In addition to the terrible strain on the nerve forces from the regular routine of school life, there are so-called amusements and recreations—may God forgive us for lying—viz: children's exhibitions, parties, balls, May dances, etc., etc., by which the nerve tension is kept at the highest pitch; from which, indeed, the children early learn the old lesson, viz: "This world would be very agreeable if it were not for its pleasures." I once saw a French novel entitled "Memoirs of an Old Man of Twenty-five," but it seems that these children were always old men and old women. While the prophets seemed to miss the mark sometimes, they "hit it fair" when they said the child should die a thousand years old.

As these matters are the result of our social and educational systems, they are beyond our control, and we can only palliate, then, so far as the teeth are concerned by "patience and plastics." If by the use of gutta-percha and oxyphosphate of zinc the decay can be arrested till the "sweet girl graduates" the tooth tissues may become more dense while she is teaching or waiting for a husband.

If the foregoing reasoning is correct, then all hygiene is dental hygiene, and every thing which aids the general physical system is of advantage to the dental organs. And I wish to make some suggestions on the subject of general hygiene, believing that unless these are fully mastered our work will not reach the full measure of a reasonable success.

When Ingersoll was asked by the clergyman what he would have made different from the order of things if he had been the Creator, he promptly answered he would have made health catching instead of disease. There is no doubt that much health could be caught with less labor than boys spend in catching fish, or politicians in catching votes, and first to avoid "colds," catarrhs, congestions, Bright's disease, etc., etc., take care of the skin. In an old book is reported a conversation between two high authorities, as follows: "And Satan answered the Lord and said, skin for skin, yea, all that a man hath will he give for his life." And the succeeding experiments on old Job fully verified their judgment of importance of a healthy cuticle.

The value of salt baths as a stimulant to the healthy action of the skin has been recognized from the earliest ages. They can be taken thrice a week, or even daily, to advantage. Under this treatment catarrhs become a thing of the past—a "putrid reminiscence," as Story would say. Are congestions of the internal organs possible with the skin in healthful action? How can Bright's disease establish itself with the skin in perfect condition? And this bath is very easily taken. One-half cup of salt, three quarts of water, a sponge, one or two coarse towels, and a room only moderately warm; to be followed by dumb-bell exercise or even free gymnastics.

Now, if a man once becomes addicted to dumb-bells he will find it a very fascinating habit. It may even become like the "ruling passion strong in death," as with the great Forrest, who was found stark and cold with a heavy bell in each hand. A few minutes' exercise with the dumb-bells is followed by a sense of exhilaration and renewed life more charming than the potent influence of old wine. The quickened circulation of the blood, the expansion of the lungs, the elasticity and tension of the muscles, the clearing of the brain, the brightening of the eye, all indicate a re-creation of the vital force. It is as near being "born again" as falls to the lot of ordinary sinners.

Not wishing to bore you with a long paper, let me commend this subject to your earnest thought and kindly criticism.—*Dental Review.*

ARTICLE V.

LEAVES FROM MY EXPERIENCE.

BY J. A. ROBINSON, D. D. S.

Some five months ago, I filled seven cavities in the labial surface in front incisors quite under the free margin of the gums for a lady who appeared well, and about thirty years old. She came because I used an obtunder for preparing the cavities. I got along pretty well with the operation and she seemed pleased. She paid the bill in part, which was $30, and left a balance for two months. At the end of the two months she paid half the balance and complained that some of the fillings were turning dark, and thought the gold was not pure. As the teeth were filled within two days. I told her the gold was the same in all the teeth, and enquired if she had been taking any medicine, and she told me "she *had not*." I told her that forty years ago, when we finished all fillings by burnishing, the fillings sometimes turned brown by the rubbing of the iron from the instrument, and I knew of nothing that would act in that way upon pure gold but iron and sulphur. She had taken nothing of the kind. As there was quite a number of cavities in the lower teeth to be filled that presented the same appearance of those that had been filled. I insisted that I thought she must have been taking some medicine that had turned the fillings, and perhaps was the original cause of the caries in her teeth. I afterward learned from a talk with her husband that she had been taking Fellow's Hypophosphite for more than three years.

The medicine was taken for nervousness, and she had received great benefit from the medicine, but perhaps it had injured her teeth. The mineral substance of hypophosphite is manganese and iron; both substances are strong in coloring qualities, and manganese has been used in the coloring of the enamel of artificial teeth a dark brown, like that on the gold fillings. I have known of two instances where the enamel was destroyed in two months by the use of muriate of iron. It will turn crown work quite dark in a few days made of *coin gold.* Packing the gums at night with prepared chalk (carbonate of lime) to be brushed off in the morning, will keep such fillings always bright, and will not injure the mouth, and the patients can do it themselves. As crown and bridge-work are fast coming to the front in operative dentistry, it may not be amiss to describe a short and easy way to repair them in case of accident. To remove crowns, I cut down the backing, if the tooth is broken on either side till it is very narrow, and with a small drill, drill a half dozen holes through the top or end of the crown inside of the band, then with a small fissure burr cut each hole into the next hole inside the band until it is entirely free all round. If the post is a screw it can be unscrewed and the band easily removed, and a new top or end put on and the tooth replaced in a very short time without pain. In bicuspids, with bifercated roots, I drill a small hole into each root, then make a staple or loop from a small hair pin, and cement into each hole, leaving it long enough to hold the oxyphosphate. In this way crowns can be made strong where the roots are decayed below the gums. Justi's cement is very strong but slow setting, so I mix about equal parts of Sampson cement with Justi's as it saves time and seems equally as strong. The same old discussions are going on at all the meetings about dental patents, and professional etiquette, and the donations of all the new improvements to the profession. It will be a happy time when physicians and dentists learn to do business on business principles. Love of approbation and encomiums are cheap, and it is gratifying to ones' friends to hear them spoken well of when they have passed away; but the time has gone by when people enjoy the abuse of Zantippe, the wife of Socrates, and call her an intolerable scold for talking back to Socrates, who never gave her a shilling to mend her shoes or provided a dinner for his family. Martyrs of to-day are the heroes of to-morrow. Fifty years ago the dentists in New England were mostly M. D.'s, but as manipulative dentistry is mechanism of the finer sort, combined with taste and gentleness, so almost all the improvements in our instruments and appliances have been perfected by the skill of those who obtained their education as best they could, and had adaptation and consecration and love for their calling. Professor Taft says the discussion is unprofitable, which is undoubtedly true; but he once said in public that he had never known a first-class operator in dentistry who was not a dentist before he became an M. D. Medicine will be as effectual, and appliances as useful if *good for any thing*, whether they are marked patent or donated to the profession. A rounded man, and a rounded life are magnificent things to behold, but true manhood is never attained by titles or diplomas or casts or sects.—*Cincinnati Medical Journal.*

ARTICLE VI.

SOME SUGGESTIONS ON METAL CAP CROWNS.

BY MR. W. MITCHELL.

He did not propose to go into the evolution of crown work, as that was already too well known to the educated dentist to require even a passing notice.

He considered that no method of crowning teeth or roots gave more satisfactory results than that of the metal cap crown, owing to its cleanliness, its indestructibility, and its adaptability to the greatest variety of cases. Its capacity for restoring articulating surfaces was limited only by the skill of the dentist. The object of his paper was to discuss the *practical* part of the subject which hitherto, he thought, had been somewhat neglected.

If the tooth or root were in a healthy condition, he proceeded to prepare it for the cap. This might be done in various ways, principally by means of corundum wheels used on the engine, for the purpose of restoring the bite or bringing about adjustment between adjacent teeth. In bicuspids or molars, when the root was on a line with the gum, he found it a good plan to put one, two, and even three good platina or dental alloy pins in the pulp canals, first fitting them and making them the proper length, and then driving them home; this gave support to the cap, especially when it had much work to do. Having coned the root or tooth, he carefully removed all enamel remaining round the cervical margin with an instrument, by inserting the point of it under the free margin of the gum, and with a draw-cut rapidly trimming off the enamel. The most careful preparation of the neck of the tooth was essential to the success of the operation, for the fit and ultimate retention of the cap depended upon it. The tooth was then ready for the cap, for which he used coin gold, rolled to No. 5 B P G for the band, and No. 3 for the top; he preferred this because of its uniformity in working, its colour in the mouth, and its durability. In preparing the band he used no model other than the tooth itself, and contended that this was the only way to get a perfect fit; another reason being that it could then be more easily determined how to trim the band to adapt it to the requirements of the gum. He next took a piece of visiting card and approximated it to the height and length for the plate required for the band; then, with a pair of moderate-sized pliers, having one jaw flat and the other half round, he proceeded to adapt the plate to the tooth, making the plate slightly flaring towards the grinding surface. When he had fitted the crown as well as possible, he closed it a little by squeezing between the fingers, so that it sprang over the tooth when put on for trial; should it not pass evenly under the gum, it should be trimmed until it followed the contour of the gum.

He recommended manicure scissors with short but heavy blades as the most suitable for cutting the gold. A line should be left for lapping, and the lap should be left on the outside for convenience in marking and trimming. Having marked along the lap with the point of the instrument, the band should be removed from the tooth, closed about a line, and soldered, which was most easily done over an ordinary Bunsen. He preferred a lap joint to an edge one, because it was more easily made, and saved time. The band might now be tried on; if too tight, it should be stretched to the required size by lightly hammering it on the horn of an anvil. He then chamfered the edge of the band that went under the gum and burnished it. After the band was started he assisted it to where it was ultimately wanted by driving it on with a steel mallet. Having judged the height the band should be left, he trimmed if necessary, and contoured, after which, he flattened the surface of the band by holding its top edge against the flat side of a corundum wheel and giving it a slight rotary motion.

The plan he recommended as the simplest for making the tops was to take the teeth that had been extracted, or models for impressions of natural teeth, invest the roots and crowns in plaster almost to the grinding surface, leave the block about two inches high, and trim, leaving a base about an inch square. He found squaring and chamfering the corners left it the best shape for drawing for the marble dust mould. The face of the block should be made flat, and left 1-16 in. wide. After securing the model, a sand—or, better—marble dust mould was made; this was finished with file and graver, and polished on a lathe.

No counter die was needed for producing the tops. Simply place the gold to be stamped on a piece of lead, a smooth surface could be easily obtained by a blow with a hammer. He recommended putting a heavy piece of tinfoil between the gold and the lead, which prevented any small particle of lead adhering to the gold and producing sweating during the subsequent stages of soldering. After swaging the top, the narrow flat margin might be utilized to hold it during soldering. Flush the top with 20-carat solder over a bench Bunsen. Having done this, touch the flat edge of the band with borax, place in the desired position on the flushed side of the top, return to the flame, when the top and band would soon unite most satisfactorily; drop into the pickle while hot to remove borax. Trim off surplus with plate shears, then grind off overhanging edges to the required contour, polish same as a gold plate minus stoning down, and the cap would be ready for final adaptation. From experience it would be found that no special vent for surplus cement would be needed. He recommended Richmond's crown and Welch's crown cements as the best. It should be mixed so that it would drop from the spatula. In conclusion, he claimed that his method was the simplest, easiest and most expeditious.—*Dental Record.*

ARTICLE VII.

A PLEA FOR TUBE TEETH.

BY C. H. WELLS, L. D. S., HUNTINGDON, QUE.

During a brief practice in the old country some years ago, I was forcibly struck with the many advantages of the English tube over the pin tooth, and the conviction remains with me that even critics here, who have never used them and who therefore are apt to despise them, would probably change their opinion, as I did, could they see the service they render, and bring them into comparison and competition with their rivals. It is true that for facility of application, the pin teeth are superior, but having said that, I know nothing more to be said in their favor. It is complained that the tube teeth, which are only held on by sulphur, draw from the pin; but what about the American teeth? The pivots or pins of the very best often draw from the teeth. You can easily replace a tube tooth which slips from a pin, or you can rivet it on the top and prevent it from slipping, but you cannot restore the tooth which has lost its pins.

One very great advantage of the tube teeth—the pin being immediately in the centre of the tooth,—is that the strain is directly in the middle; the masticating force comes plump in the centre, and is better distributed. In the pin teeth this strain is uneven, and it is common, even in gold plates, to find the attachment of the lining broken from the plate. How frequently, too, does it occur with vulcanite. The whole strain on our bicuspids and molars, is outwards, is not borne by the lower part of the lining, but by the small metal pins in the tooth. - But the metal pivot of stiff gold into which the tube tooth is placed, bears strain better, because it is next to impossible to bring pressure on it at any angle, except the tooth itself first breaks, and not often even then.

Another advantage is that to the tongue tube teeth are nearest to nature, and feel best. With ours, the tongue is constantly in contact with metal linings. Another advantage is that with the exception of the specks of solder holding the pins in the plate, there is no quantity of solder likely to cause contractions in the arch. I was told by old British dentists who used tube teeth thirty years ago, that when the journals were discussing the warping of gold plates in this country, they were rarely troubled, owing, they thought, to the absence of a great quantity of solder. A gold plate with tube teeth always fits well if once made well; but the best gold plate with teeth which have been lined and soldered, may be warped any time it has to be repaired, and may be nearly ruined if a botch should repair it with common solder. No botch can spoil a gold plate with tube teeth, because he cannot adapt a new tooth to perfection.

I admit that for close bites, our teeth are better than tube teeth. They can be used too, better with vulcanite combinations. The cheapening of artificial work, not the improvement of it, has given the boom to the pin tooth, and yet among the latest improvements by several manufacturers, we find a modified form of the old tube teeth, with the holes through the sides, and intended for miserable vulcanite to run into, instead of for solid gold pins.

I am using almost exclusively the English tube tooth—with the interior platinum tube lining, when I can get them, in places where ordinary and even improved methods of pivoting is required. They are as dense and as solid as flint, and I have yet to meet the first fiailure on any such account as that friability characteristic of our teeth. I should like to see you cut one of these teeth in two with a pair of scissors, as you can cut clean our gum blocks! You might as well try to take a bite out of a bit of steel.—*Dominion Dental Journal.*

ARTICLE VIII.

FIFTH, SIXTH, SEVENTH AND EIGHTH DISTRICTS DENTAL SOCIETIES OF NEW YORK STATE.

One of the most pleasant and profitable conventions which has been held for a long time, was that of the union meetings in Syracuse, October 25th, 26th. The organizations under the skilful and genial leadership of Drs. S. B. Palmer and G. L. Curtis, was all that could be desired. Among the foreign visiting guests the following were present from Canada:—Drs. J. B. Willmott, G. S. Cæsar, C. V. Snellgrove, J. G. Roberts, and W. G. Beers. The paper of Dr. J. C. Curtis on "Chemistry an Important Feature in Dental Education," assumed a practical character. He maintained that all dental caries is due to external causes, the substances brought in contact with them as food or medicine, or those resulting from decomposition of one or both. If sour apple or lemon or dilute acid is taken into the mouth, the teeth become what is termed "set on edge," which means that the calcium of the tooth has been acted upon by the acid, forming a new compound, and leaving the organic parts unprotected. From decomposition of starchy foods results acetic acid, and from this by further fermentation, butyric acids. Nitrogenous substances, as lean meats, albumen and mucus, are converted by decomposition into acids of the nitric and nitrous groups. The normal period of the stomach contains hydrochloric acid, and in manv cases of dyspepsia butyric acid is found; while nitric, as sulphuric, sulphurous, nitro-hydrochloric, and hydrochloric acids are in use medicines. Of the organic acids, we have in apples, malic acid; in plums, prunes, grapes and currants, tartaric acid; in lemons, citric acid.

Whenever lean meats are allowed habitually to remain between teeth, decay ensues. This is explained by authorities as follows: "When nitrogenous organic matter is exposed to the air, the nitrogen assumes the form of ammonia; but when alkalies, such as potash, soda or lime are present, a further slow oxidation takes place, and nitrates of these metals are formed." In combatting the action of acids upon tooth-structure, an acid is always unsatisfied until it is combined with a base to produce a salt, so that instead of permitting the salt to be formed at the expense of tooth-structure, the base is supplied from outside, the problem is solved.

Happily, potassium, and magnesium have more affinity for acids than calcium. It is well established that an approximately decayed tooth, though ever so well filled, will again decay if subjected to the same influences as before it was treated. The conditions are changed in a measure by self-cleaning spaces, by contriving only the removal of one or more teeth; but whatever means are employed, reliance is still placed on the saliva, because, first it acts mechanically in conjunction with the tongue, and second it is alkaline and will neutralize acids with which it comes in contact. The teeth of smokers who take care of them are better preserved than those of non-smokers, because the salivary glands are stimulated to produce an abnormal quantity of saliva, and because a certain amount of creasote comes into the mouth with the smoke to retard fermentative action. Decay cannot occur in the presence of an alkali. Alkaline earths, as mouth-washes, are valuable.

Dr. Barrett admits the correctness of the merely chemical ideas, but they ignore later investigation. In the mouth we find the acids so diluted that the reactions do not always occur. Citric acid may produce the reaction noted, malic acid found in an apple is not strong enough to act on enamel. We used to talk of catalysis, but that question has been solved by the knowledge we now have of the fermentative organisms. Dr. Miller has shown that they produce acids, and that these are the cause of caries. Fermentation lies at the root of all dental chemistry.

Dr. Dwinelle said fermentation will account for much of the phenomena of caries which chemistry will not account for. He denied that decay is as apt to recur, as a rule, after the teeth are put into good condition.

Dr. Brophy disagreed with the statement that caries does not occur in alkaline conditions of the saliva. Some of most extreme cases of decay are found in mouths that are always alkaline. This is accounted for by the fact that lactic acid produced through the agency of fermentation is the most important factor in decay.

Dr. J. B. Willmott took exception to the explanation of the phenomenon of "setting the teeth on edge." He thought is a hyperæsthetic condition caused by the acids permeating the enamel, and acting as an irritant to the underlying dentine, the condition passing away as soon as the acids are washed out. He thought that it is only those acids which are formed in the mouth in actual contact with the teeth that act upon them, and that they act only when in the nascent condition; and that those acids which are taken into the mouth in fruits, etc., have no destructive action upon the tissues with which they are brought into contact. It has been pretty well established that the exciting cause of caries in the teeth is fermentative action, and that recurrence of caries after filling, may be better prevented by the use of germicides and antiseptic dentifrices than by the use of antacids.

Dr. J. C. Curtis believes where decay is found in alkaline mouths, there is a line which corresponds exactly with the location of the decay, where tests with litmus show that there are acids. He believes in the use of antiseptics —in those things which prevent fermentation—because they stop the formation of acids.

Dr. E. T. Darby referred to the experiments conducted by the late Dr. Wescott, showing the action of acids upon tooth structure. He found that all mineral and vegetable acids need not be of any great strength to decalcify teeth. Even one part in one hundred was sufficient in most cases to corrode the surface. A tooth immersed in the juice of a lemon (citric acid) would soon lose its polished surface and assume a chalk-like appearance, and if let alone long enough would undergo a partial decalcification. Common cider vinegar (acetic acid) will corrode the surface of the enamel in forty-eight hours. If you would note the action of acid upon carbonate of lime, place a little lemon-juice or strong vinegar upon a marble slab and allow it to remain twenty-four hours. The polish is first destroyed, and then white powder may be scraped from the spot after the acid has evaporated. Dr. Brophy has spoken of the alkalinity which is shown to exist so frequently in some mouths. This may be true of some portions of the mouth. For instance, the product of the sub-maxillary, sub-lingual and parotid glands may show, as they accumulate in the floor of the mouth, but if litmus paper were put into the cavities of carious teeth or in spaces where food has accumulated, the test would doubtless show an acid reaction.

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preventive against decay

Fermentation is the great factor in producing caries of the teeth, and cleanliness, absolute cleanliness, about the only preventive. Dr. Miller has found that the micro-organisms of caries do not flourish in carbolic acid or bichloride of mercury. Neither are they in their element when in the forms of tobacco or in a decoction of that weed.

Dr. J. Curtis would like to know if the microbes do the work of destruction themselves, or do they generate an acid which does. He believes we always change the shape of a tooth when we fill it, or at least that we change the conditions which surround it, and that is why, when the work is properly done, the decay does not recur. The surfaces are made smoother, so that they can be kept clean more readily, and thus prevent fermentation from taking place.

Dr. John Van Duyn, Syracuse, addressed the convention on the subject of the "Abnormity of the Dentist's Eye." He said:

"The eye is the most important instrument which the dentist has. In some callings the hearing or other faculties are more useful, but in the practice of dentistry the eye is the all-important. In proportion as the eye of the dentist is defective, his usefulness is lessened. Some persons have trouble with their eyes from birth, others have difficulties which are acquired at various periods of their lives, at thirty, forty or fifty years. He would not go into a list of the troubles of the eye, but would only state a few of them. These are connected with refraction,—with the way the rays of light are disposed of after they enter the eye. [Dr. Van Duyn here drew upon the blackboard a diagram of the normal eye, which he explained.] When a ray of light enters the normal eye, what becomes of it? Those rays which strike the centre go straight through; if they strike above or below the centre they are refracted—he would not speak of the laws of refraction—so that all meet at a point upon the retina, which is called the focus. Such an eye is called emmetropic. When the light rays are refracted in this way the eye sees, and vision is perfect. In an eye in which the antero-posterior portion is shortened, the focus comes behind the retina, and it is characterized by indistinct sight, the hypermetropic eye. There is another condition, just the opposite of this, in which the antero-posterior portion of the eye is too long. Here the light-rays focus before they reach the retina. This is the near-sighted, the myopic eye. There is still another condition, of which Dr. Marshall can tell you something, the irregular eye, the astigmatic eye. In this the meridian in one eye is normal, or hypermetropic, or myopic, and in the other, one of the other conditions is found. Any two of them may be combined. If it is a regular astigmatism—where one meridian is normal—the difficulty can be perfectly corrected by properly made glasses; but when it is irregular,—when neither eye is normal—the correction can be only approximate. In this eye the focus is not a point but a line.

The correction of all these difficulties of vision is of course by means of glasses. When the eye has its focus too far back, the lines of the rays of light must be made to converge before they enter the eye; so we put on a convex glass. For the myopic eye, the focus must be thrown back; hence concave glasses are used to cause the rays to diverge, so that when they enter the eye they will be carried further back than they would be without the glasses.

The hypermetropic and the astigmatic eye are congenital; the myopic is or it is not congenital. In the former case it is known; in the latter it may go on for years before the fact is discovered. When it is acquired or congenital the way to find it out is by comparison with normal sight. If it is found that the lens of the eye is imperfect so that one does not see, it must be changed. The sailor's eye, the keen vision of which is so often quoted, is not so good as the landsman's. The sailor will announce that the ship is approaching land long before the landsman aboard observes any sign of it. But it is not superior sight on the part of the sailor. He sees a mistiness, which his experience teaches him means that the land is near. With the hypermetropic eye there is not always a necessity for glasses, as when the condition exists in the young eye, because at five, ten, fifteen, or twenty years the lens is so soft in the lamellæ and the cillary muscles so strong that a greater curve is given to the lens when looking at near objects, so that the defect is not noticeable, although the act of seeing in such cases is accompanied by muscular effort. As the person grows older the lens becomes harder and is less easily curved, so that at the age of thirty to forty or forty-five years the muscular effort required begins to be felt as a strain and glasses are required. Every eye becomes hypermetropic at the age of seventy or eighty years; that is, it loses the power of curving the lens. This curving of the lens is what is called "accommodation." When we look at an object at a distance and then at one nearer; the lens is curved more for the nearer object.

Applying these general principles to the eye of the dentist, it is readily seen that a fissure in the enamel so fine as is often found will require strain of the eyes to see it; also, how important for the discovery upon the surface of the smallest points of the beginning of caries is perfect vision. Then, too, how is the approach of disease as disclosed by the shadows, by the depth of color, which we get by transmitted or reflected light, to be seen without it? All these things are only appreciated by the finest vision. Two luminous points cannot be distinguished by the normal eye except they are separated by an angle of sixty seconds; within that distance they seem as one. A few eyes can distinguish the difference at fifty seconds' separation, while others are so coarse that they require an interval of eighty or ninety seconds. In order to know, one must see, and persons who have not a sufficiently sensitive retina cannot know because they cannot see. Accuracy of vision depends upon the sensitiveness of the retina.

To go back to the emmetropic eye; let a man use the naked eye till he is forty years old in a pursuit which requires constant close application of sight, as in the practice of dentistry, and he will begin to feel the effects of fatigue on the eye. Sometimes the disturbance is in the eye itself, sometimes it is shown by headaches, and even by general weariness of the whole system. He is not sick, but he tires easily. This is due to the fact that the ciliary muscle is not able to do its work as formerly, and the strain is reflected. Just as soon as this occurs the retina loses sensitiveness, and just as soon as the sensitiveness is lost we do not see. So that it becomes necessary for a man intending to adopt the practice of dentistry to recognize that he must have perfect eyesight; and it follows as a corollary that no one should enter the profession without first having a competent examination of his eyes. If he has astigmatism of a kind which cannot be corrected by the use of glasses, he should refrain from entering the profession. Again, if, having become a dentist, he finds, after reaching the age of thirty years, that his eyes become fatigued, he should periodically repair to the proper authority for examination. By such a course only can he avoid the troubles which are to be attributed to over-use of the eyes.

Dr. John S. Marshall, Chicago: Prof. Van Duyn never said a truer word than when he declared that the eye was the best instrument of the dentist. The dentist is usually very sensitive about his eyes. How many of them put on glasses willingly? Dr. Marshall presumed that he was born with astigmatism. He was troubled with fatigue of the eye and general weariness all through his student life, and for twelve years after entering upon the practice of dentistry. He was completely broken down, and finally it was suggested that there might be trouble with his eyes. Prof. Van Duyn made an examination which disclosed the existence of horizontal stigmatism, and he prescribed the very glasses which the speaker has on to-day. There are probably many here to-day who suffer from these troubles of the eye. They cannot get near enough to the patient's mouth to see the work properly, and when the day's work is done they go to their homes feeling worn out. A gentleman near Chicago thinks that dentists should use different glasses from those usually prescribed. He thinks they should wear prismatic glasses, because, as he says, the dentist has to get so close to his work that the normal eye cannot see without injury, and the effort causes a slight convergent squint. If they would get prismatic glasses the eye wou'd look straight out. Dr. Black wears them with much satisfaction. If dentists would lay their pride aside and wear glasses whenever they are needed, they would be better off and their patients very much so. He had tried to get along with using them only a part of the time. One day he would wear them and feel no trouble. The next day without them he would feel the old sense of fatigue. Since wearing them continuously he had had no trouble. It is probable that some persons go to the age of fifty years without losing the power of accommodation. The majority of dentists probably suffer from some form of eye-trouble. It is likely that very few who have been in practice for ten years have perfect eyes. The reason for this is that a good deal of the dentist's work is done in the back of the mouth, where the light is poor under the most favorable circumstances.

Dr. Van Duyn thought that this would hardly correct the evil. It is probable that many of the defects of vision from which dentists suffer existed long before they became dentists, which only makes true what he had said as to the importance of the dentist knowing exactly what his eyes are.

Dr. J. Branston Willmott, Toronto, Canada, would not venture to speak upon the subject, but that possibly the relation of his personal experience might prevent others from suffering a similar penalty for want of knowledge. He was born, he presumed, with a defect of vision,—congenital astigmatism,—but he did not find out until he was thirty-eight years of age. His eyes did not focus together, and when his sight began to fail he was troubled with a great twitching of the muscles of one eye, accompanied by considerable weakness. Before night came each day he would be wearied out, and sleep failed to restore him to his normal condition. His eyes were examined by an oculist, the difficulty discovered, and glasses were made to correct the astigmatism. The twitching ceased in one day after he began to wear them, and his health was soon restored to its normal tone. What was singular about the case was that about two years afterward the prescription glasses were broken, and since then he had used ordinary, though strong, glasses, without any recurrence of the former symptoms. The wearing of the special glasses seemed to have cured his trouble entirely. He related these facts merely to emphasize the wisdom of consulting a specialist on the first indication of failing or defective vision.

Dr. Truman W. Brophy, Chicago, felt more than usual interest in the subject under discussion, because of the experience he had passed through during the past three or four years. Some four years ago his eyes began to grow weary toward the latter part of the day, and especially along towards the end of the week. He procured glasses, but the examination was not critical, and later it had to be done over. With the first glasses he found that on Monday he did not need them; on Tuesday he used them a part of the day, and on Wednesdays and Thursdays from the time he began operating in the morning. During the remainder of the week he was troubled with headaches as before, in spite of the glasses. After two months of this kind of experience, he underwent a critical examination by a well-known oculist, who pronounced his eyes hypermetropic, and prescribed the proper glasses. The headaches disappeared at once on beginning to wear them, and he felt far better than for years. It would seem to be the part of wisdom for those who use the eyes much to get glasses early, not only to avoid distressing physical symptoms, but, what is of more importance, to preserve their eyesight through life. Prof. Van Duyn says that hypermetropia is usually congenital. The speaker is satisfied that he had none of it in his earlier years. One thing to which he would direct special attention as of the highest importance to dentists,—the necessity of not using the eyes in a bad light, as towards night. In having glasses made do not have the bows too tight, as by pinching the nose they will cause headache, but have them made to fit on loosely.

Dr. W. H. Dwinelle, New York: As to the question whether a large magnifying glass would correct the difficulty of poor sight, it might do so for the normal eye which was simply growing old; but it will do no good for the astigmatic eye. This trouble is only to be corrected by glasses for the eye. It has been stated that as we grow old the focus of the eye is carried farther back. It sometimes occurs that the sight of old persons is partly restored to the normal condition. This he had observed among several of his patients, one of whom was in his office recently, and her eyes were tested in reading the finest type used in printing. The theory is that in such cases the retina to some extent takes up the office of the ciliary muscles and so partially restores the lens to its normal condition. We can thus take up the office of the ciliary muscles at any time to some extent, and on this principle some have recommended the manipulation of the eye as a hygienic measure. John Quincy Adams always manipulated his eyes, and he never wore glasses. Dr. Dwinelle is satisfied from experience with his own eyes that this theory has at least a foundation in fact. We know that in the old the eye becomes flattened which throws the focus out of place, and we can almost recognize near-sighted persons by the shape of the eye, which is much more rounded in the outward contour than the normal eye.

Dr. Marshall wished to offer a suggestion which followed out will afford considerable rest to the eyes during an operation. We all know that when the eye is kept fixed on any one point for a considerable length of time, and more especially if the gaze is intent, it is very fatiguing to the muscles. If the dentist's office is so arranged that he can once in a while look away from his work to some object at a distance, he will find that from this simple act his eyes will be rested; and if he can make this a habit he will be very much benefited.

Dr. Brophy wanted to ask Prof. Van Duyn a question, and he would preface it by the statement that he thought the cause of the trouble with his eyes was a cross-light in his office. The question he would ask is, What light is best for the dentist, and is a cross-light detrimental?

Dr. Van Duyn. The best light comes not direct from the sun, but from a luminous sky or a light cloud. A north light from a cloud is best of all. A cross-light should never be used.—*Cosmos.*

Editorial, Etc.

UNIVERSITY OF MARYLAND DENTAL DEPARTMENT.—The Annual Commencement exercises of this Dental Department will be held at the Lyceum Theatre, Baltimore City, on the evening of March 13th, 1889.

The Address to the Graduating Class will be delivered by Dr. J. B. Patrick, of Charleston, South Carolina. The Class Address will be delivered by Hampton K. Smith, of S. C., a member of the Graduating Class. William L. Fish, of Newark, New Jersey, is the President of the Graduating Class.

On the day preceding the annual Commencement, March 12th, 1889, the "Class Contest" for prizes will take place in the Dental Infirmary of the University, beginning at 10 A. M. On the evening of Commencement day, March 13th, 1889, after the Commencement exercises, the Annual Meeting of the Alumni Association of the University of Maryland Dental Department will be held, followed by the Alumni Banquet. All friends of this Department are cordially invited to the Class Contest and Commencement exercises.

FERDINAND J. S. GORGAS, Dean.

Obituary.

Died: January 8, 1889, **Dr. Thomas Brian Gunning**, at No. 42 Stuyvesant Place, New Brighton, Staten Island, N. Y.; age, 76 years.

Dr. Gunning was born in London, England, but came to this country at an early age and began the study of dentistry in 1840 in the office of John Bundell, one of the most famous dental surgeons of that time. His experience in this office coupled with his natural inventive genius, soon placed him in a high position in the profession. In 1861 he introduced the hard-rubber interdental splints for the treatment of fractured jaws.

In April, 1865, Dr. Gunning was called to Washington, at the suggestion of Surgeon B. F. Bache, Director of the United States Laboratory, to attend William H. Seward, then Secretary of State, who had sustained a double fracture of the jaw, by being thrown from his carriage, the case being further complicated by the attempted assassination. Dr. Gunning enabled Mr. Seward to attend a Cabinet meeting the day after a splint was applied. Dr. Gunning was one of a commission to select the medical instruments to be sent to the Paris Exposition of 1867. In the Centennial Exposition of 1876, Dr. Gunning's exhibits explained his peculiar modes of treatment completely, showing what was required for every description of fractured jaw.

In 1867 he published a pamphlet on the "Physiological Action of the Muscles Concerned in the Movement of the Lower Jaw," in 1874 a pamphlet on "The Larynx, the Source of Vocal Sounds," and in 1878 on "Hard Rubber Appliances for Congenital Cleft Palate." He retired from practice three years ago. He leaves two sons and one daughter.

Bibliographical.

THE PHYSICIANS' VISITING LIST, for 1889, published by Lindsay & Blakiston, Philadelphia, Pa., contains Almanac for 1889 and 1890; Table of Signs to be used in keeping accounts; Marshall Hall's Ready Method in Asphyxia; Poisons and Antidotes; The Metric or French Decimal System of Weights and Measures; Dose Table, revised and rewritten for 1888, by Hobart Amory Hare, M. D., Demonstrator of Therapeutics, University of Pennsylvania; List of New Remedies for 1888, by same author; Aids to Diagnosis and Treatment of Diseases of the Eye, Dr. L. Webster Fox, Clinical Asst., Eye Department Jefferson Medical College, and G. M. Gould; Diagram Showing Eruption of Milk Teeth, Dr. Louis Starr, Professor, of Diseases of Children, University Hospital, Philadelphia; Posological Table, Meadows; Disinfectants and Disinfecting; Examination of Urine, Dr. J. Daland, based upon Tyson's "Practical Examination of Urine," 5th Edition; Incompatibility, Prof. S. O. L. Potter; A New Complete Table for Calculating the Period of Utero-Gestation; Sylvester's Method for Artificial Respiration; Diagram of the Chest; Blank Leaves, suitably ruled, for Visiting List, Monthly Memoranda, Addresses of Patients and others, Addresses of Nurses, their references, etc., Accounts asked for, Memoranda of Wants, Obstetric and Vaccination Engagements, Record of Births and Deaths; Cash Account, etc.

A number of improvements and additions have been made to the reading matter in the first part. This has been done, however, without increasing the number of pages. Great care has been taken in selecting the leather for the covers and in each detail of manufacture.

Perpetual edition, without dates, can be commenced at any time, and used until full. Similar in style, contents and arrangements to the regular edition. No. 1. Containing space for over 1,300 names, with blank page opposite each Visiting List page. Bound in Red Leather cover, with Pocket and Pencil, $1.25. No. 2. Containing space for 2,600 names, with blank page opposite each Visiting List page. Bound like No. 1, with Pocket and Pencil, $1.50.

These lists, without dates, are particularly useful to young physicians unable to estimate the number of patients they may have during the first years of practice, and to physicians in localities where epidemics occur frequently.

VICK'S FLORAL GUIDE.—It did seem as though the seedsmen outdid themselves last year in the line of elaborate catalogues, but here comes Vick's Floral Guide for 1889, from Rochester, N. Y., better than all previous issuès. "Better" hardly expresses it—rather, we should say, far superior. It has been changed in every respect; new cuts, new type, enlarged in size (opening like an old-fashioned singing-book); contains three elegant lithographs (8x10¼ inches) of Roses, Geraniums and Melon and Tomato; besides a very fine plate of the late James Vick and his three sons who now own and manage this large business. These features must make the Floral Guide valuable to their many thousands of customers in this country.

We also notice that Vick returns to the plan started by the founder of the business years ago, of offering cash prizes at the State Fair. One would think they were a little out of their heads to offer to the public such a work as the Guide free, for that is what it amounts to, when they say it will be sent on receipt of fifteen cents, and that a certificate good for fifteen cents worth of seed will be returned with the Guide.

PEARSON'S DENTISTS' APPOINTMENT BOOK is one of the neatest and most convenient publications for such a purpose that has ever been issued. It is not only attractive in appearance, but can be carried in the vest pocket. Its management of dates, &c., is all that could be desired.

Monthly Summary.

MISTAKEN DIAGNOSIS.—*By Ed. L. Fairley, L. D. S.*—An interesting case of mistaken diagnosis by two surgeons in New York came under my notice recently. Miss E., aged 29, came to me about some carious teeth in the upper jaw of the right side. Noticing a large swelling on the left side of the same jaw, I inquired as to its history. The patient was more than usually intelligent on the subject. It had first attracted the attention of a surgeon a year ago, who declared it was an osseous tumor; then last July, of another who said it was a cystic tumor; both holding that a surgical operation for removal would be necessary. There were no decayed or undeveloped teeth on that side of the jaw; no functional disturbance; no congestion of the gums; no pain. About a year ago a slight pain had been felt in the first molar, but it was said to be entirely sympathetic. In the meantime the so-called "tumor" was slowly growing in size. The patient got so accustomed to its presence that I fancy she rather cherished it, and would not have thought any more for the present about it, had I not warned her of its possibilities.

Upon examination, I found imperfect calcification of the first molar, and the indications of a dead pulp, but very slight response to tapping. A cavity was drilled through the crown into the pulp cavity. The pulp was mummified and dry as punk. The canals of both roots were enlarged down to and through the apex; and by the use of peroxide of hydrogen and the usual treatment, I treated the tooth which was the cause of all the trouble. The swelling was reduced in a few weeks.—*Dominion Dental Journal.*

THE CARE OF THE NAILS.—Very few people know how to properly care for the nails. In cleaning them, a sharp knife ought never to be employed, and between the ends of the nails and the fingers the space should be filled with soap, and then removed by brushing with the so-called nail-brush.

Many improperly cut away that part of the flesh which grows over the nail from the bottom; but it should be simply pressed backward, and sufficiently to show the white part, considered by some to be a mark of beauty. If the flesh is adherent to the nail the operation may be facilitated by passing the sharp point of a knife underneath the fold of flesh and separating it from its attachments. With this done, it can be pushed back more readily, scissors should never be used to cut the nails; that should be done only with a sharp penknife.—*Boston Journal of Health.*

HURRY IS THE CAUSE.—The evils of hurry are manifestly among the causes of poor and inefficient work. From a habit of hurry some people, having, or imagining they have, more to do in a given time than can be done properly, grow confused, agitated and nervous; and, under this pressure, they proceed with the work in hand without the requisite deliberation and care, perhaps omitting parts of it (sometimes important parts), and producing at least an imperfect and inferior result, which can neither be permanent nor satisfactory. It is not too much to say that a large proportion of the unhappiness, the ignorance, the loss of property, and even the loss of life that is endured in the world is to be traced to the hurry and drive which characterize so much of the labor performed.—*Press and Printer.*

FOOD-CRANKS.—The vegetarians are at it again, trying to persuade people to give up eating meat. Of all cranks on earth food cranks are the wretchedest. They pass their miserable lives in an insane effort to find out what agrees with them. As a rule nothing does. They remind one of the horse that was fed on saw-dust—just when he learned to eat it he died. They are afraid to eat a wholesome meal. Morbid dread of swallowing some impurity takes away all pleasure of living. Dyspepsia like a starving vulture sits upon their congested maws and pecks at their vitals. The sorriest specimens of humanity I have seen are those that patronize so-called health-food stores. How they survive is a mystery.—*N. Y. Tribune.*

WHO IS MY NEIGHBOR?—Human beings touch at numerous points. Their brotherhood may be denied or ignored, but it perpetually reasserts itself. It is a truth of physical science as well as of Divine revelation that unto himself no man can live or die. In the matter of communicable diseases, this matter assumes an awful significance. Thus, recently a case was reported of a child, a member of a large family, who was taken sick with scarlet fever on reaching a large city far from home. In vain the parents sought in that city for a place, public or private, in which to care for this sick child. There was no such place, and the father was compelled to take his child in a crowded sleeping-car on a long journey. One shudders to think of the exposure to numerous persons, old and young, to the contagion of this disease. The child was a neighbor to these and doubtless to some it transferred the deadly poison.

Carlyle tells the story of a poor widow thus: Her husband died of typhus, in one of the lanes of Edinburgh, and she wandered about the town with her three children, seeking help, and finding none, returned to her lane and died there. Her journeying started an epidemic that killed seventeen persons. Those to whom this widow appealed denied her sisterhood to them, but she proved her sisterhood, as her typhus fever killed them.

Numerous instances are fresh in every mind, proving the same truth. Cholera, yellow fever, small pox, etc., are each constantly proving to the world that each individual may be a neighbor to one distant thousands of miles. It is difficult to prove that any one individual in the world may not be a neighbor to any other person, by communicating to the same some diseased germ or poison. So completely has rapid transit annihilated time and space, that persons and articles carrying disease are met at most unlooked for places and under unwonted circumstances.

Admitting this, it is a question of personal import to every person that all other persons in the world be free from the contagium of disease. Hence, the one thing that should meet the heartiest support of all is the cleanliness of the person and abodes of the entire race. Unless this can be secured, commercial and social intercourse is fraught with danger.

What shall I do with my dirty neighbor? This is a question of the times, which all sanitarians are seeking to answer, and to which at another time we shall direct attention.—*American Lancet.*

EARLY RISING AND LONGEVITY.—Professor Humphry's recent Collective Investigation Report on Aged Persons, contains some very positive evidence on a matter which has already engaged the attention of moralists as well as physicians. "The opportunity for nutrition to do its restorative work was in nearly all provided by the faculty of 'good sleeping,' to which was commonly added its appropriate attendant, the habit of 'early rising.'" Thus there is a relation between early rising and longevity. No doubt many people will hastily seize upon the sentence just quoted, and employ it in edifying lectures or essays for the perusal of youth, or embody it in popular medical works. Important qualifications follow in Dr. Humphry's report, but they are likely to be overlooked. Doubtless the habit of early rising is, in itself, healthy; most of all, it is a good sign of health when it evidently signifies rapid recovery from fatigue. Again, it usually denotes a strong will, the gift as a rule of a good physical constitution, or at least the safeguard of average bodily strength. Late risers are generally either invalids or persons of bad habits, idlers who are never free from other vices besides idleness. The nervous exhaustion which keeps a man wakeful throughout the small hours produces sleep late in the morning. This exhaustion is invariably due to one of several life-shortening influences, especially anxiety or indiscretion in diet or drink. Early rising is thus rather one effect of certain favorable influences, another result of which is longevity, than a cause of longevity. To turn a weakly man out of bed every morning at seven o'clock will not prolong his life. It will be noted that by "good sleeping" Professor Humphry signifies quick sleeping, "that is, the reparative work which has to be done in sleep is done briskly and well." Here, again, we have an effect of a cause; but preventing a weakly subject from sleeping more than four or five hours nightly would not cause him to live long, but would rather tend to shorten his life. Equally important are Professor Humphry's observations which show that by "early" he does not entirely mean the time by the clock. The word "has a relative significance with reference to the time of going to bed. A person who retires to rest four hours after midnight and gets up at 10 a. m. may be strictly regarded as an 'early riser.'" Thus, early rising is synonymous in long life histories, with short sleeping, which means rapid recovery from fatigue, a sign of bodily strength. These scientific facts in no wise contradict the alleged value of early rising as a practice to be cultivated by all persons in good health. It is excellent as moral discipline, and eminently healthy as a matter of fact. Most persons will eat three meals a day. When a man gets up late those meals will probably follow each other at too short interval to be wholesome. When he is an early riser it will probably be otherwise. He can enjoy a good breakfast, and by the time for his lunch or mid-day dinner he will have an honest appetite again.—*British Medical Journal.*

REFLEX PAIN FOLLOWING THE EXTRACTION OF A TOOTH.—The following case came under my notice whilst a pupil with Dr. Parkinson, England. In July last John R.—age 19— serving the occupation of gardener, and undergoing treatment prior to filling, in the course of which I had the misfortune to leave in the posterior buccal root, a portion of a nerve broach, so small that at the time I was not aware of the accident. A few days later the tooth was removed, when nothing unusual occurred to excite attention. The next day the patient returned, complaining of pain in the vacated tooth socket, and also of pain in the testicles; the latter he felt to a very slight extent when the tooth was extracted. He was told to come on the following day but failed to do so, and shortly afterwards went to the sea side. He returned from Hastings a month later, better, and called at the surgery, when I learned that the pain in the two situations continued for a month after the tooth was removed, and generally appeared at the two places simultaneously. There were no physical alterations in the glands; he had gonorrhœa ten years ago, from which he duly recovered and is now married.—*V. A. Latham.*

MEDICAL MEN AND DENTISTS—The question has been recently raised as to the scale of fees to be charged by medical men to dentists and their families. We do not remember to have seen the question formally put before, but now that this has been done we do not hesitate to express an opinion that dentists ought to be considered more or less in the light of brother practitioners. Their conduct towards medical men who are in need of their services is almost invariably characterized by courtesy and consideration, and the opportunity to reciprocate is one which should be seized with *empressement.* The status of dentists has made vast progress during the past few years, and their social position is now more in accordance with the highly-skilled services which they render to a suffering public. Dentistry is, properly speaking, but a department of surgery, and by no means the least useful. Dentists do more for our comfort and health than do many more purely surgical operations, and they do it moreover with an ease and a certainty which the others have yet to attain.—*Medical Press.*

MISSIONARY DENTISTS.—The favorable reception of missionaries of the Gospel among heathen nations has of late years been greatly promoted by sending as heralds regular graduates of medicine, who, by the exercise of their skill in the healing art, have won the confidence and esteem of most barbarous and blood thirsty tribes. The practice of dentistry is likewise proving a means for peacefully introducing the missionary into the good graces of suffering savages, and in a recent tour of the island of Formosa it was a not infrequent preliminary to religious services for the missionary to extract fifty or more teeth. The radical relief of toothache, by simple and obvious means, may well excite heartfelt gratitude in the sufferer, and engender such confidence in the friendly disposition of the dentist that easy access will be gained for the faithful ministration of the Gospel teacher. The attention of the various missionary boards might be profitably directed to the obvious advantages of having more of their messengers duly qualified and equipped for the gratuitous practice of dental surgery among the heathen.—H.

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At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge**,) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

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Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

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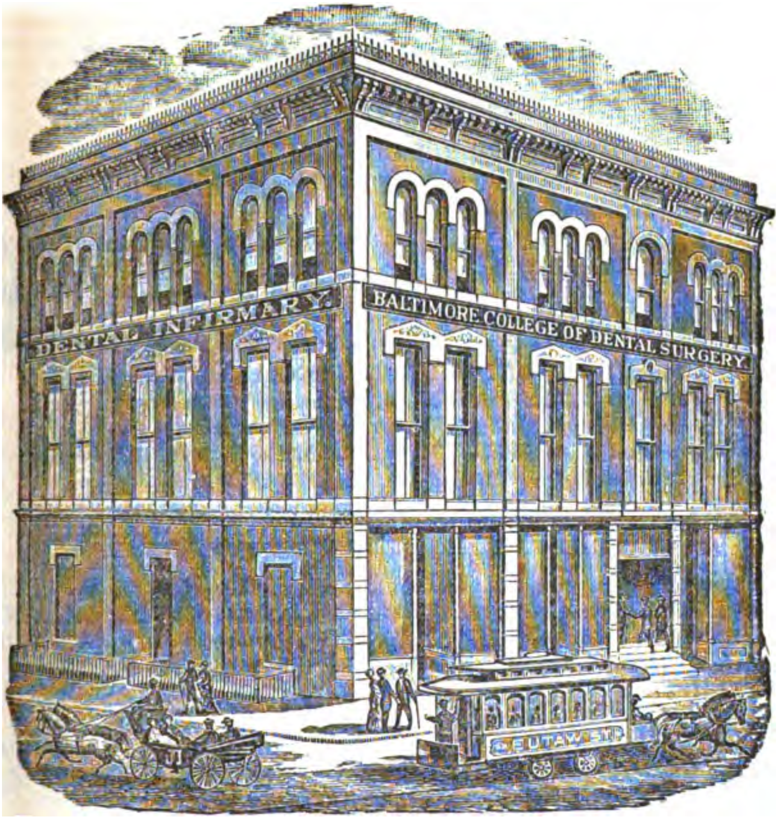
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The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations.

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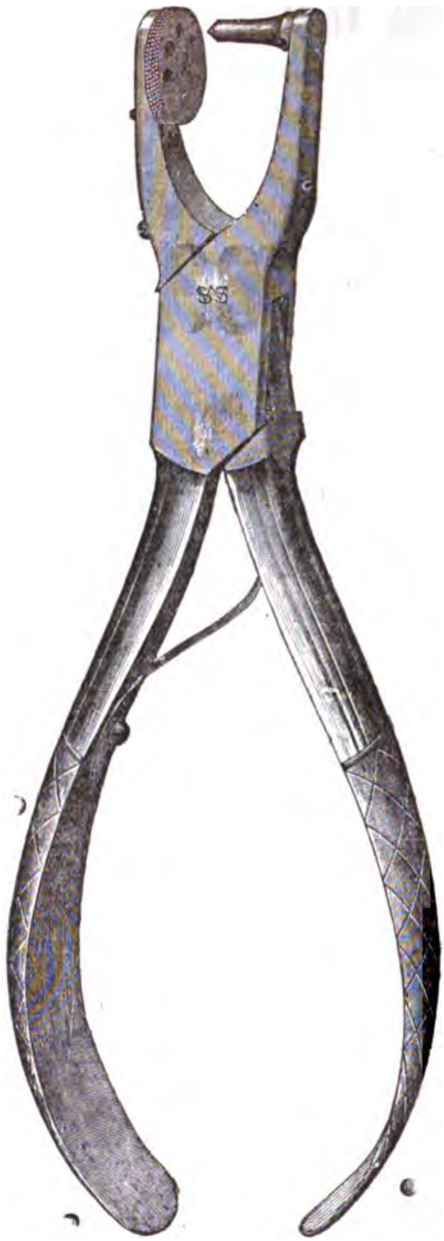

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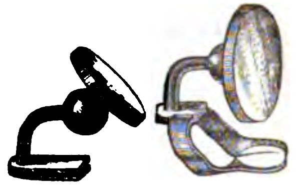

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506 BROOME STREET, - - - N. Y. CITY.

We beg leave to call the attention of the Dental profession to the fact that our business was established in 1840, and has been strictly confined to purifying and hammering metals. With this experience we feel justified in asserting that any article we put upon the market should certainly have the merit which we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made *cheap*.

Our Extra Dry Alloy and Improved Amalgam are composed of entirely pure metals, fused and mixed with the greatest care consistent with a view to produce the general effect to be desired in all Amalgams. They contain no *Cadmium* or *Zinc*.

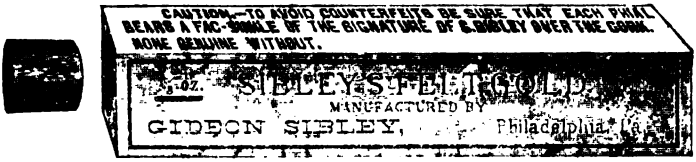
We will cheerfully extend every facility to anyone desiring to test them to their fullest capacity, and most respectfully invite a trial.

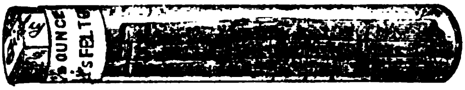
These fillings can be obtained at any first-class Dental depot, or directly rom our house at the following rates:

Soft and Cohesive Foil	$30 00	per oz.
" " " "	15 00	" ½ "
" " " "	7 50	" ¼ "
" " " "	4 00	" ⅛ "
Eureka Gold Filling at same rates		
Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

All goods can be returned if not as represented.

For Sale By **SNOWDEN & COWMAN**


CAUTION.—TO AVOID COUNTERFEITS BE SURE THAT EACH PHIAL BEARS A FAC-SIMILE OF THE SIGNATURE OF G. SIBLEY OVER THE CORK. NONE GENUINE WITHOUT.
⅛ OZ. SIBLEY'S FELT GOLD
MANUFACTURED BY
GIDEON SIBLEY, Philadelphia, Pa.



GOLD FILLING MADE EASY

BY USING

SIBLEY'S FELT GOLD.

After a long series of experiments, I am now able to offer to the profession an entirely new form of Gold for Filling Teeth, which enables the operator to work more rapidly, with greater ease, and produce better results than with any other form of Gold. The Gold is prepared in strips of convenient thickness that may be cut with sharp scissors or a knife into pellets of any desired size. In color it

RESEMBLES FROSTED GOLD.

Is absolutely pure, thoroughly cohesive and homogeneous and readily spreads; conforming to the walls of the cavity.

MAKING A PERFECTLY TIGHT FILLING.

Unless the Gold is exposed to moisture annealing is unnecessary.

Full directions for use accompany each package.

That the profession may have an opportunity to test this Gold, without buying the usual minimum package, for a short time I will put up packages containing 1-40 of an ounce; price, $1.00.

PRICES OF GOLD AS FOLLOWS:

⅛ ounce, $4.50. ½ ounce, $17 50. 1 ounce, $34.00.

CAUTION.—See that a fac-simile of my signature is over the cork of each phial none genuine without.

CASH MUST ACCOMPANY ALL ORDERS FOR GOLD.

Needle Foil Carrier.

PATENT APPLIED FOR.

The cut in the margin represents the full size of this useful instrument.

It consists of a fine needle point, controlled by a spring with sufficient tension to hold it extended while picking up the Gold and carrying it to the Cavity, by pressure the Gold is then forced into position when the spring allows the needle to recede and free itself, leaving the Gold in place. This Carrier was especially designed for Sibley's Felt Gold, but will be found to surpass anything heretofore used for this purpose with any form of gold. Price, $3.00.

GIDEON SIBLEY,
13th & Filbert Streets.
PHILADELPHIA, PA.

FOR SALE BY SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

——THE ATTENTION OF——

Western and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

Careful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

CHARLES ABBEY & SONS,

MANUFACTURERS OF

DENTISTS' FINE GOLD AND TIN FOIL.

The attention of Dentists is invited to our FINE GOLD FOIL, which is prepared under our constant personal supervision. Our Nos. are 4, 5, 6, and 8.
We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5, and 6.
ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, prepared expressly for the purpose, with great care, by ourselves.

ADDRESS— **CHARLES ABBEY & SONS, Philadelphia**

LUKENS & WHITTINGTON,

ESTABLISHED 1866.

MANUFACTURERS OF

DENTAL INSTRUMENTS

And Dealers in Dental Supplies,
WHOLESALE & RETAIL,
626 RACE STREET,
PHILADELPHIA, PA.

Jacob J. Teufel & Bro.

—DENTAL—

FORCEPS

A SPECIALTY.

MEDAL AND DIPLOMA AWARDED BY THE

Centennial Commission, 1876.

114 South Tenth Street,
PHILADELPHIA.

All Our Forceps are Warranted.

FOR SALE BY SNOWDEN & COWMAN.

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD
RESULTS USE THE
BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling
to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED

—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN

9 W. FAYETTE STREET, Baltimore, Md.

REDUCTION IN FORCEPS.

We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, -	**$2.00**

ARTICULATORS

From - - - - -	**$1.00 to $4.00 each.**

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - -	**each .40**

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - -	**$1.25**
Hood & Reynold's 0, 1, 2, 3, per pound, - -	**1,25**

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - -	**$4.00**

Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.

Caulk's Diamond Pellets, per ounce, - - - - -	**$4.00**

Put up in boxes containing 1-4, 1-8 and 1-16 ounces.

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - -	**.50**

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - -	**$4.00**

Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages. 18

Painless Dentistry.

Please note the following Testimonials, which are a sample of hundreds received from every part of the United States,

DR. E. M. WARNE, Waltham, Mass.—Your Anæsthetic does all you claim it will do.

DR. A. H. LEE. Washington, D. C.—Your Anæsthetic is a wonderful article, and in my hands has proven a success.

DR. J. E. BREEDING, San Diego, Cal.—I use your Anæsthetic daily, and with perfect success.

DR. H. C. MORRISON, Morristown, O.—My patients express themselves much pleased with your Anæsthetic.

DR. A. H. CHANDLER, Sturgeon Bay, Wis.—I find your "Local Anæsthetic" all you claim it to be.

DR. THOS. M. TALBOTT Washington, D. C.—I have tried your Anæsthetic until I am satisfied it will do all you claim for it.

DIRECTIONS.—Dry the gums thoroughly, then apply the "Anaesthetic" to the gums around the tooth with a pledget of cotton; let it remain for one minute, then instantly remove the tooth

A 2-Oz. Bottle of Dr. E. T. Barr's "LOCAL ANÆSTHETIC" sent prepaid for $1.00, and guaranteed to make Teeth Extracting painless, or money refunded, by Dr. E. T. BARR, Manufacturer and Proprietor, Bowling Green, Ky.

FOR SALE BY SNOWDEN & COWMAN, BALTIMORE, MD.

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN,

MANUFACTURERS OF

Dental Chairs, Lathes, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,	$32.00	$16.00	$8.00	$4.00
Valleau's	30.00	15.00	7.50	4.00
Ney & Co's.	30.00	15.00	7.50	4.00
S. S. White's, ½ Century,	30.00	15.00	7.50	4.00
" " Globe,	30.00	15.00	7.50	4.00
" " 1000 Fine,	30.00	15.00	7.50	4.00
R. S. Williams, Cylinders, A,	30.00	15.00	8.00	4.00
" " " B,				
" " Rect. Pellets,				
" " Standard,				
Watt's Crystal,	32.00	16.00	8.00	4.00
E. Rowan & Co.	29.00	15.00	3 20 per 1-10 oz.	
" " untrimmed,			5.60 per 1-5 oz.	
" " "			2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book.
S. S. White's, - - - - - - -	30 " " "
" " Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN,
No. 9 West Fayette Street Baltimore.

PORCELAIN TEETH.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

S. S. WHITE'S.

	GUM.	PLAIN.
RETAIL PRICE.	15 Cts.	10 Cts.
For $15 00 net Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE,	15 Cts.	10 Cts.
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per. set of 14,	$ 1 00
" 11 " "	10 00
" 29 " "	25 00
" 60 " "	50 00
" 92 " "	75 00
" 125 " "	100 00

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,

DENTAL DEPOT,

9 WEST FAYETTE STREET, BALTIMORE.

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

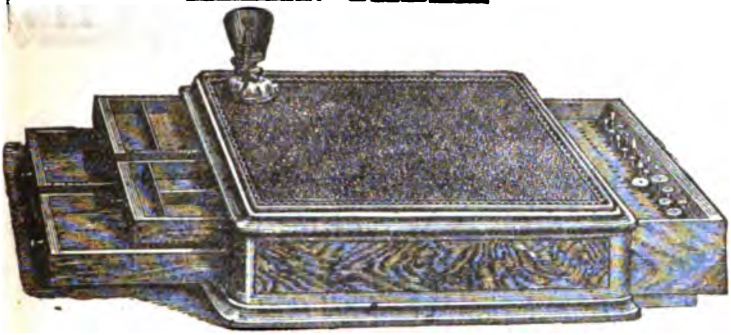
MANUFACTURED
—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

ALLAN TABLE.

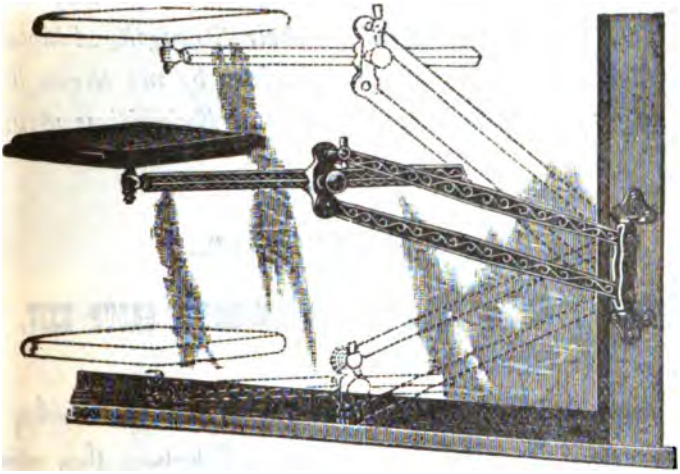


VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

Lamp and Shield, $0.70

STUDENT BRACKET.



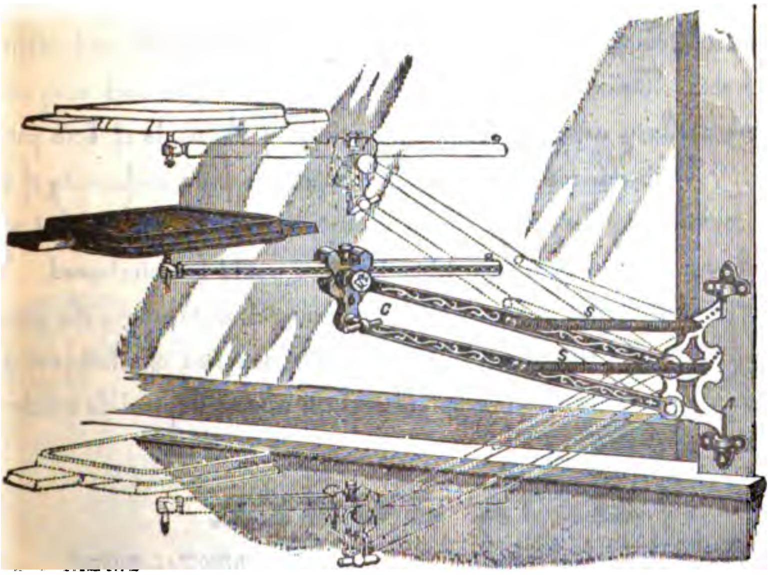
This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

Trade Supplied. *SAML. A. CROCKER & CO.*

CONE JOURNAL BOSS BRACKET.



This is the most convenient Bracket made. All metal parts Nickel Plated. Bar Slides between four rollers. C, the Clamp, can be regulated for any load. The Allan Table works fine on this Bracket.

PRICE WITH SMALL TABLE, - - - - - $22.50.
" " Veneered Allan Table, - - - 29.00.
" " Glass Slides, Allan Table, - - 32.00.

Porcelain Teeth.

Beginning at Vienna, in 1873, where I made my first display, I have received successively at the Six World's Fairs the ***Highest Award for ARTIFICIAL TEETH;*** *this being the most important branch of my business and all that I exhibited.*

The greatest proof ever extended for Superiority to any manufacturer of ***PORCELAIN TEETH,*** *for their Strength, Adaptation and Natural Life-like Appearance, was received by me through the Report of the Judges; Centennial International Exhibition 1876.*

EXTRACT

FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XXIV.

"H. D. Justi **EXHIBITED NOTHING BUT TEETH,** but his display was beautiful in the extreme. In color, translucency and texture, they were all that could be desired; they were a faithful reproduction of the physiological characteristics of the natural organs, both to the individual teeth and relatively to the entire set. Their conformation with reference to close and easy adaptation to the maxillary arch showed careful study of the needs of both patient and operator. Their various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, was so perfect that when in the mouth no suspicion of their artificial nature would be entertained. The disposition of tooth-material was so skillfully managed as to secure the greatest amount of strength with the least bulk; and the insertion of platinum [illegible] was so arranged as to render their displacement an almost impossible acciden[illegible]

H. D. JUSTI.

BRANCH: *PRINCIPAL DEPOT:*

66 E. Madison St. Chicago. **1301 & 1303 Arch St. Philadelphia.**

SIX WORLD'S FAIR MEDALS

OF THE

HIGHEST ORDER OF MERIT

AWARDED FOR SUPERIORITY

—AT—

VIENNA, CHILI, PHILADELPHIA, PARIS,
SYDNEY, MELBOURNE,

–TO–

H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
–OF–

PORCELAIN TEETH.

VIENNA, 1873.

SANTIAGO DE CHILI 1875.

CENTENNIAL EXHIBITION, PHILADELPHIA, 1876.

PARIS, 1878.

AWARDED TO H. D. JUSTI FOR ARTIFICIAL TEETH

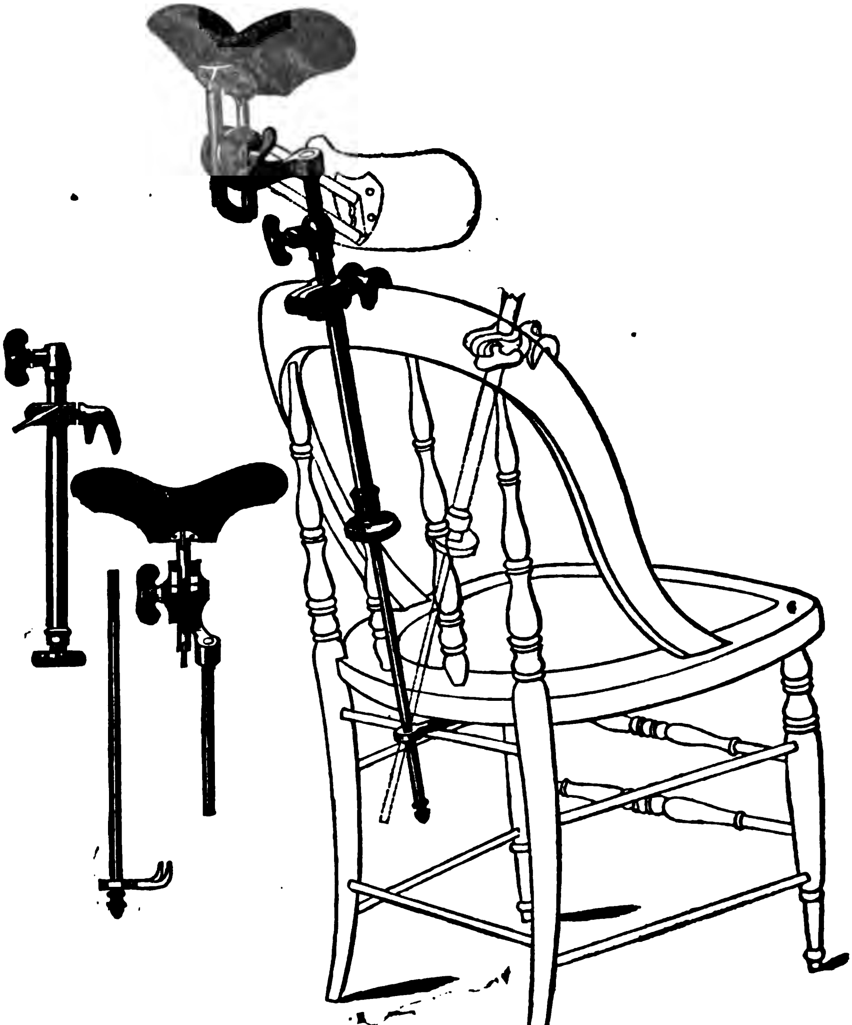
SYDNEY,

OURNE, 188

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

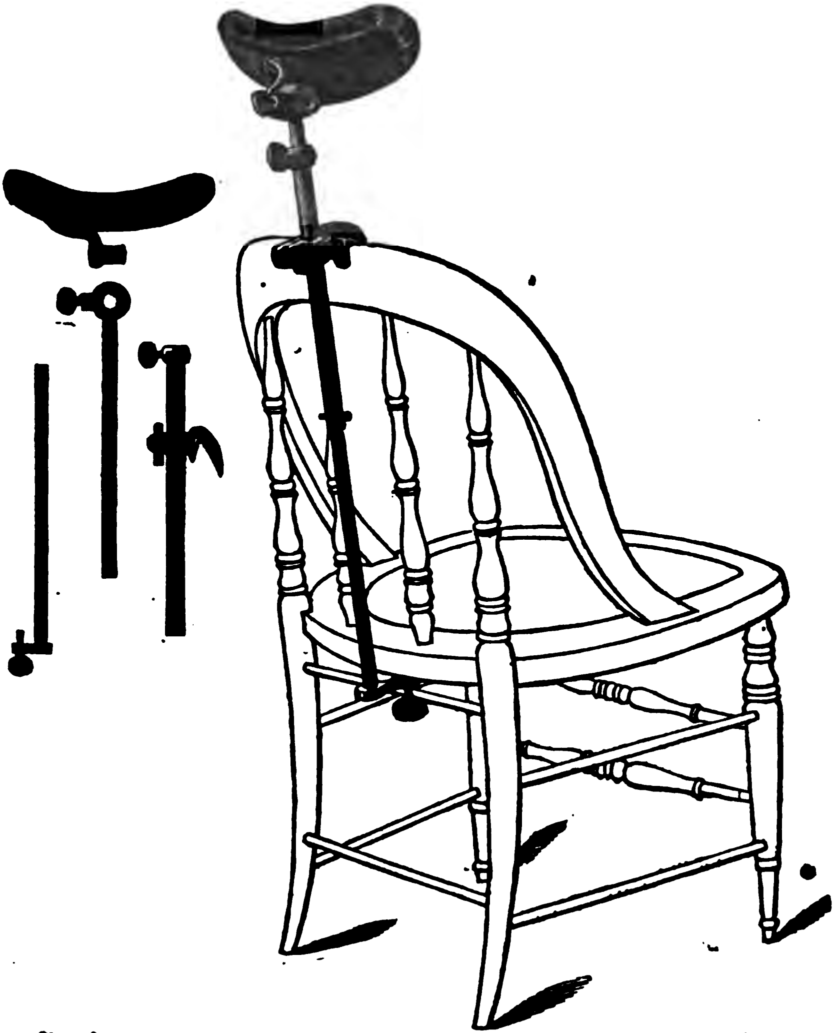
SNOWDEN & COWMAN,

West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Rest.

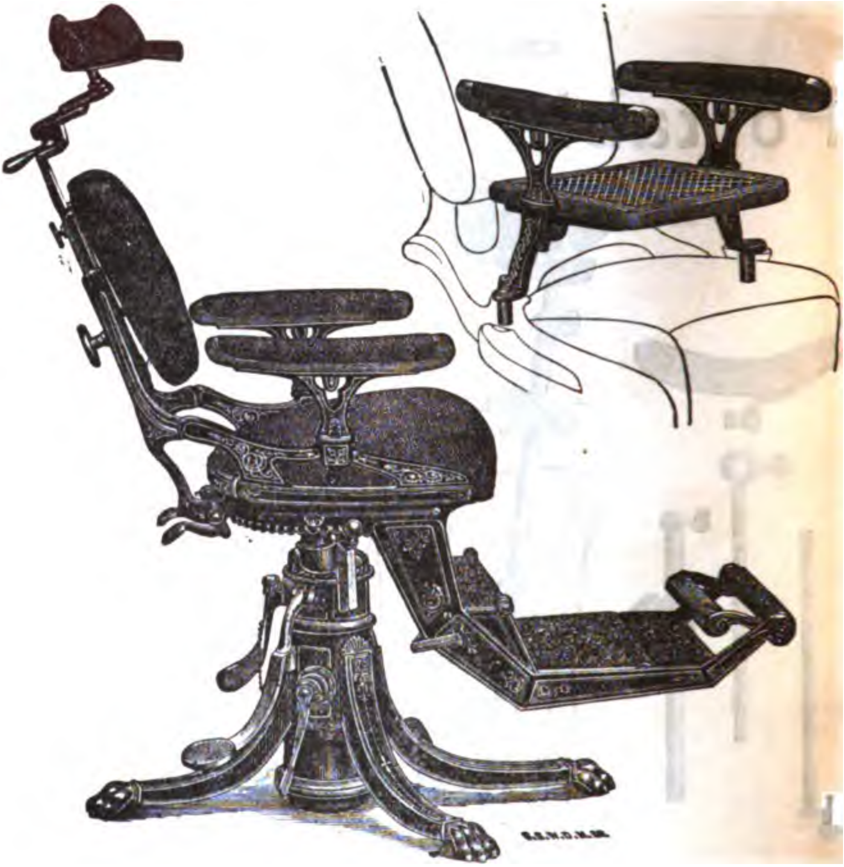


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 00.

SNOWDEN & COWMAN, 9 W. Fayette Street.

The Improved Wilkerson Chair.



Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

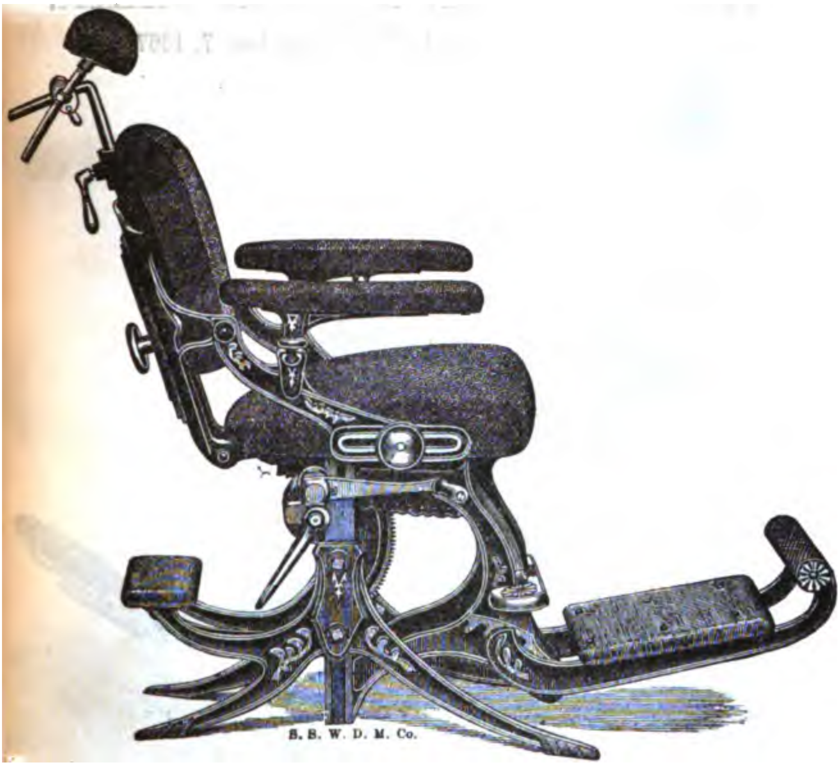
PRICES.

In best quality Green, Crimson, or Maroon Plush - - - - -	$180 00
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet - - - - - - - - - - -	200 00
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match - - - - - -	210 00
In Crimson Plain Turkey Morocco or Leather - - - - - -	180 00
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests -	210 00

BOXING FREE.

For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

THE CYCLOID CHAIR.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for he foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

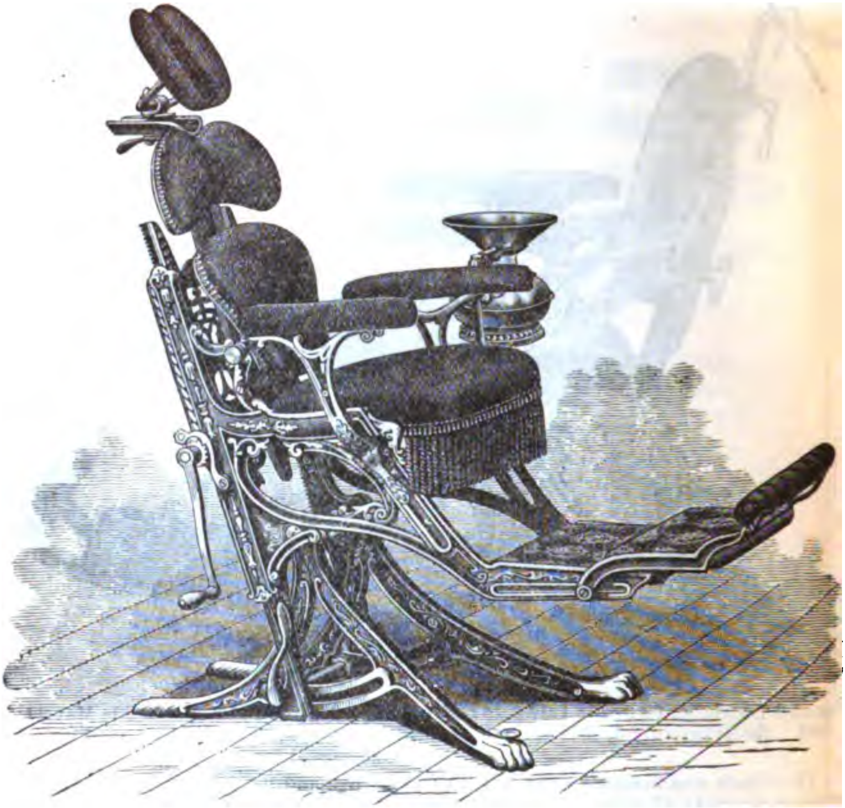
Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Materia., - - - - $ 80.00
" " " Best Quality Maroon or Green Plush, 95.00

For Sale By SNOWDEN & COWMAN,

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$130.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery :	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

PRICE.

In Corded Upholstery.	$105.00

We supply either style of the Morrison Chair, with or without Casters. When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
“ “ “ 2, “	37 50
“ “ “ 3, “ (upright)	36 25
“ “ “ 4, “ “	37 75
“ “ “ 5, “ “	31 25
“ “ “ 6, “ “	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright “ Leather Covered, “ “ “	10 00
“ “ Japanned, “ “ “	5 00
Gas Bag, 4½ gallons of capacity	2 25
“ “ 7 “ “	3 50
Stand for 100 gallon Cylinder	4 50
“ “ 500 “ “	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
“ “ 500 “ “	85 00
Refilling 100 gallon Cylinder	2 50
“ 500 “ “ 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	26	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 60	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 “ “ “ “	3 75
20 “ “ “ “	7 00
Pound	35

Boxing extra.

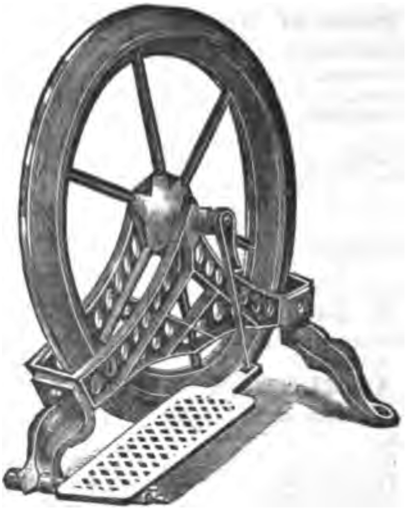
DENTAL PLASTER.

Barrel	$ 3 50
Half-Barrel	2 50
Quarter-Barrel	1 60
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

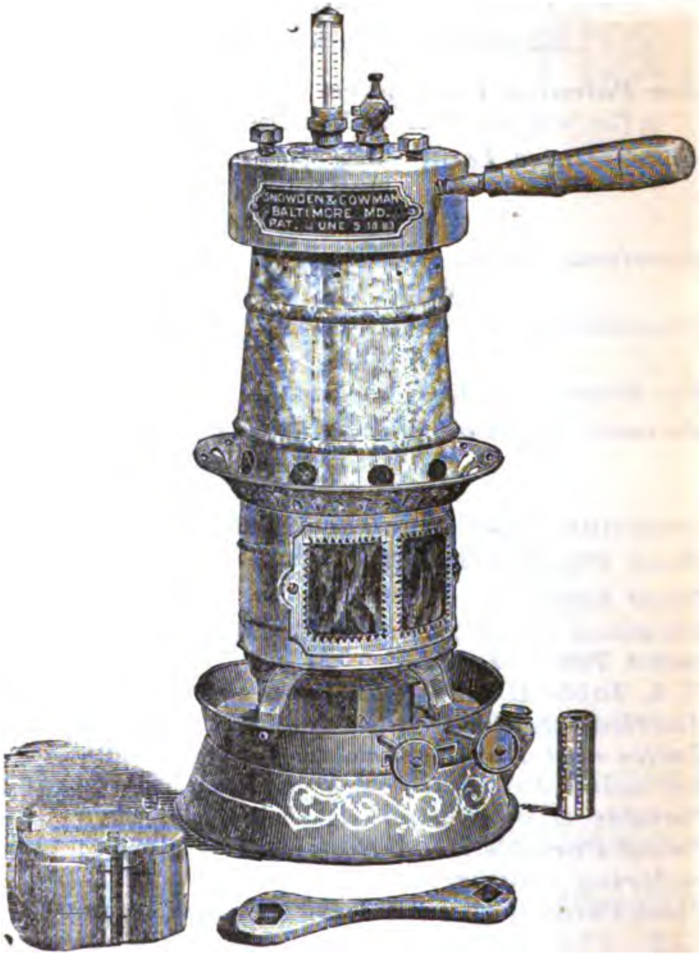
Manufacturers of the following articles:

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - - -	15 00
" " Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel, No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	.75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - -	.90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 5
Britannia Impression Cups—long handles, various styles and 27 sizes—each, -	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, **$18.00**

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right: and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—Howard W. Hoopes, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—Drs. Williams and Pennington.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. Duck, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—Thomas H. Davy, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—Bernhard Myer, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. Bierbower, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—Wm. B. Finney, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

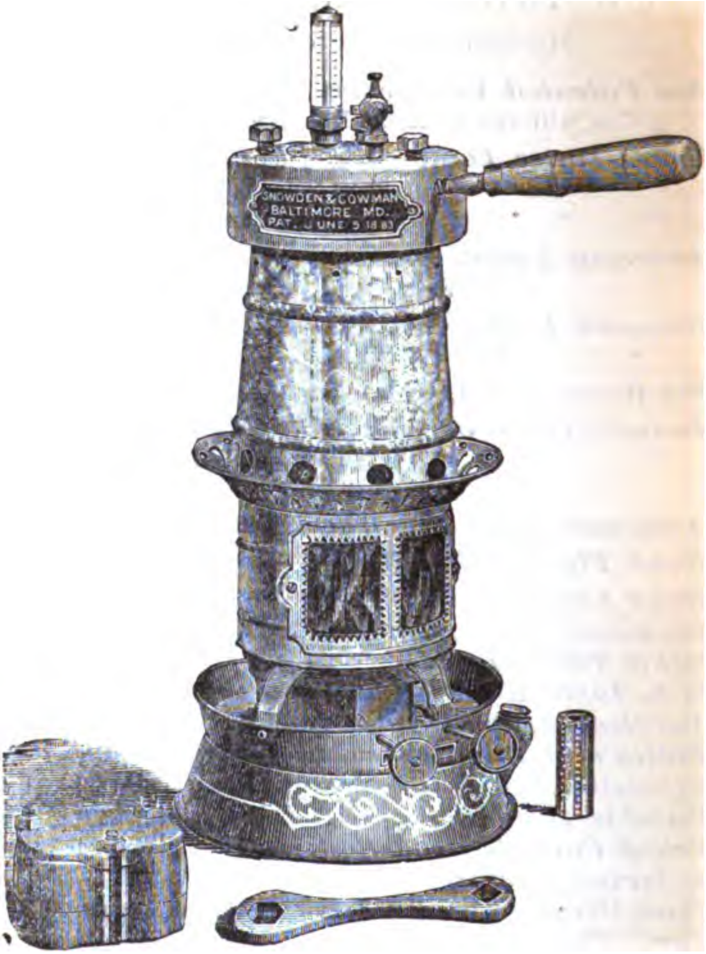
SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

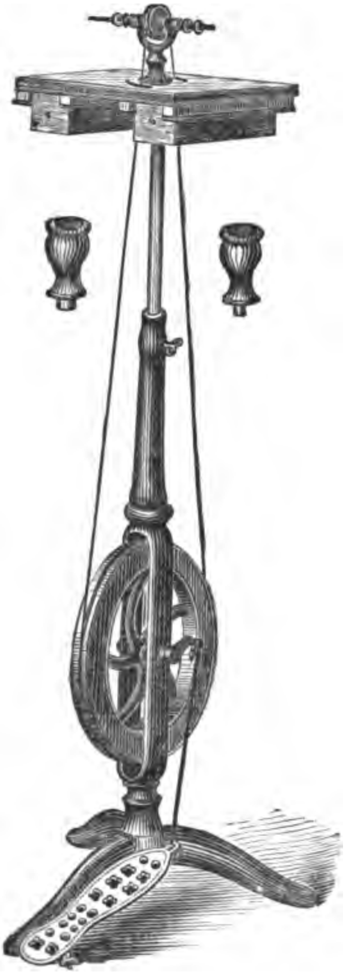
SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

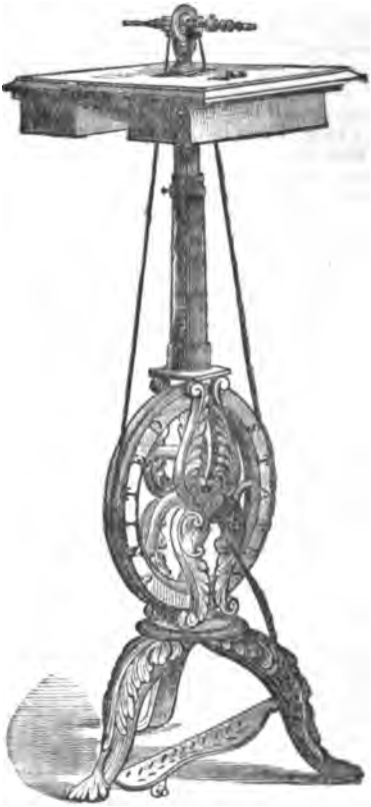
☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

UNITED STATES LATHE.



We offer to the dentist a most complete **FOOT LATHE** for grinding teeth and polishing plates.

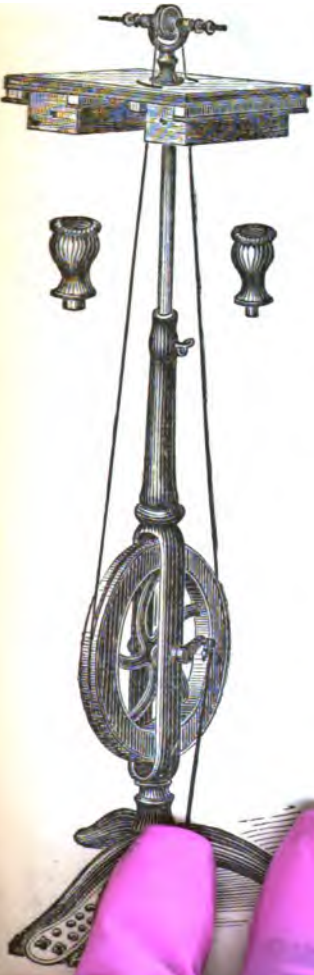
It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut,	**$16 00**
" " " " Long "	**16 00**
" Stand only, including Cord and Coupling,	**12 00**

SNOWDEN & COWMAN,
No. 86 West Fayette Street, Baltimore.

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

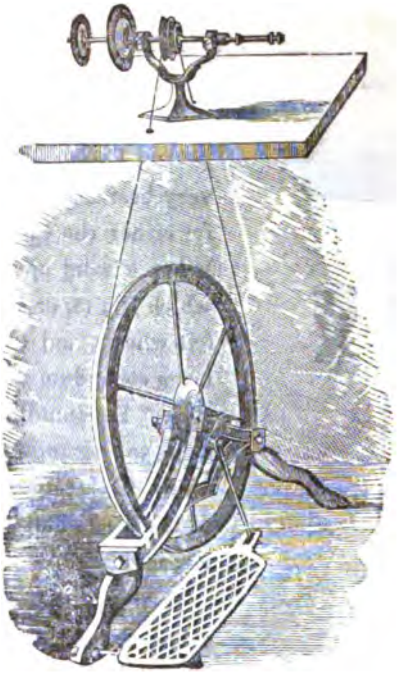
Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

☞ We also make for this Lathe a Socket S[illegible]—similar to our U. S. Lat[illegible] Spindle.

he[illegible] with two [illegible]	-	$15 00
[illegible] Spindle, [illegible]ucks,		15 00
[illegible] Large [illegible]el,		16 00
[illegible] -	-	15

[illegible]VD[illegible] [illegible]WMAN,
9[illegible]e Street, Baltimor

The Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

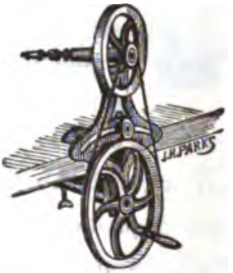
This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.

PRICE...$8 00

DIAMOND FLY WHEEL AND HEAD.

Complete, boxed...PRICE $14 00

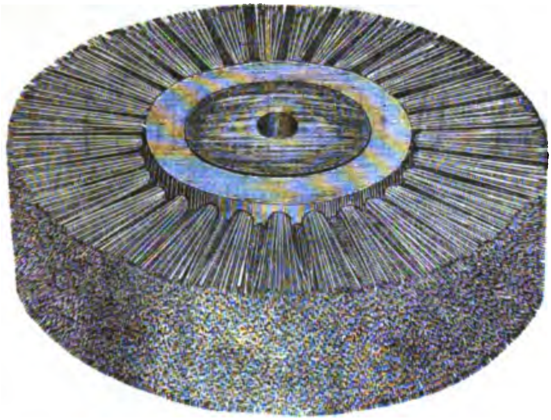
QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel with brass washers and two chucks complete. Weighs only four pounds

PRICE...$4 50

NOVELTY BRUSH WHEELS.



STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1¼	inches	diameter,	each	$0.10
"	4	1	"	"	"	1⅞	"	"	"	.14
"	1	2	Rows	"	"	1⅜	"	"	"	.15
"	2	2	"	"	"	1⅜	"	"	"	.15
"	5	2	"	"	"	1⅝	"	"	"	.18
"	6	2	"	Medium	"	1⅝	"	'	"	.18
"	8	2	"	"	"	1½	"	"	"	·18
"	10	2	"	Soft	"	1½	"	"	"	.18
"	7	2	"	"	"	1½	"	"	"	.18
"	9	2	"	"	"	1½	"		"	.18
"	11	2	"	"	"	1⅞		"	"	.20
"	14	2	"	"	"	1⅞		"	"	.20
"	13	2	"	Medium	"	1⅞	"	"	"	.20
"	19	2	"	Soft	"	2⅛	"	"	"	.25
"	22	2	"	"	"	2⅛	"	"	"	.25
"	21	2	"	Medium	"	2⅛	"	"	"	.25
"	20	2	"	Stiff	"	2⅛	"	"	"	.25
"	18	3	"	Soft	"	2	"	"	"	.28
"	17	3	"	Stiff	"	2	"	"	"	.28
"	26	3	"	Soft	"	2¼	"	"	"	.34
"	50	3	"	Soft	"	3	"	"	"	.37
"	30	4	"	"	"	4	"	"	"	.44

CONVERGING BRISTLES.

No.	16	3	Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.28
"	15	3	"	Stiff	"	2⅛	"	"	"	.28
"	24	3	"	Medium	"	2¼	"	"	"	.34
"	23	3	"	Stiff	"	2¼	"	"	"	.34
"	28	4	"	Medium	"	3	"	"	"	.44
"	27	4	"	Stiff	"	3	"	"	"	.44

STRAIGHT BRISTLES—LONG SHANKS.

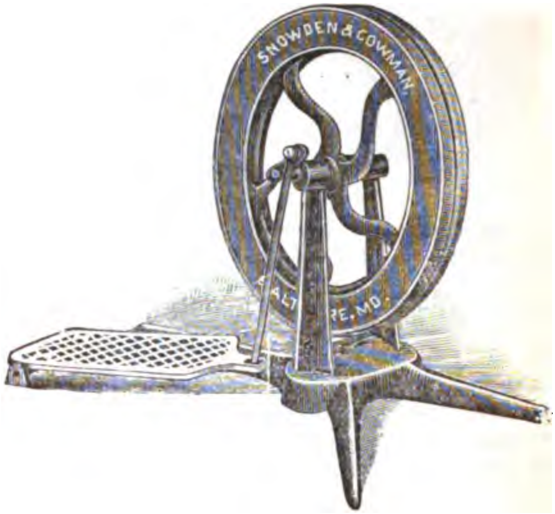
No.	52	2	Rows	Stiff	Bristles,	1½	inches	diameter	each	0.18
"	66	2	"	"	"	1⅞	"	"	"	.24

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2	Rows	Stiff	Bristles	1½	inches	diameter	each	0.18
	65	2	"	"	"	1⅞	"			24

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

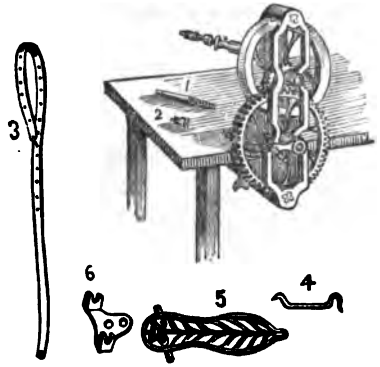
Price Boxed, - - - - - - $8.00

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

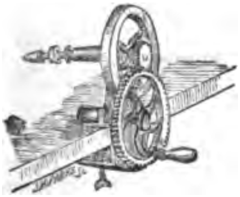
Portable Hand or Foot Lathe.



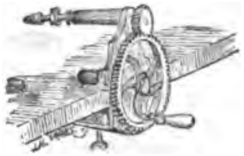
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

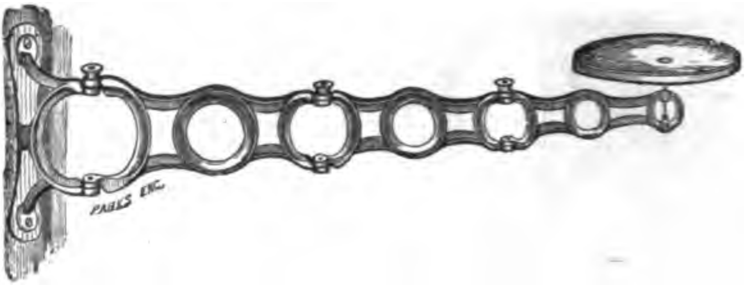
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Baltimore.

Snowden & Cowman's Extension Bracket.



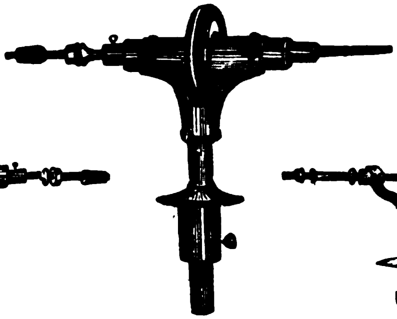
This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

Price, Round Table as per cut, - - - - - - - $6 00.

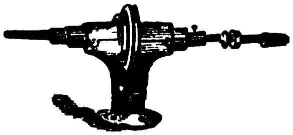
Square " with drawers. - - - - - - - - 8 00

TABLE HEADS.

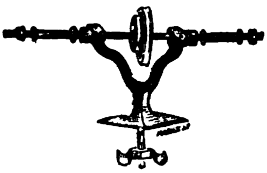
A.



B.



C.



A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table................................PRICE $5 00

B.—U. S. LATHE HEAD, with holes in the base to screw to any table.

PRICE—Short Spindle (as per cut B).................$4 00

" Long Spindle............................. 4 00

C.—DIAMOND LATHE HEAD.—The head, pulley, and spools which retain the wheels and brushes, are of Brass. The spindle is of the best unannealed hammered steel, and of the size to suit the holes in the wheels

PRICE................. ....$6 00

SNOWDEN & COWMAN 86 W. Fayette St., Baltimore

BRITANNIA IMPRESSION CUPS,

LONG HANDLES.

We Manufacture the following Sizes and Varieties:

UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.

ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.

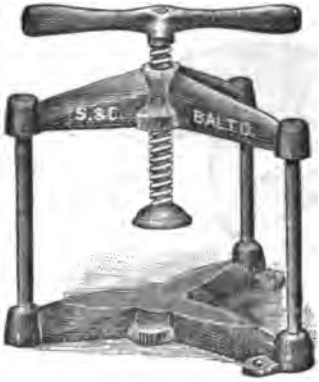
PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..................................Each......................25cts

SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

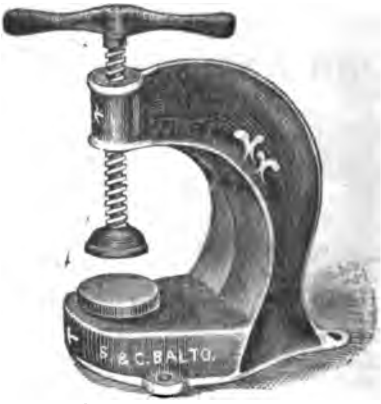
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - - $1.50.

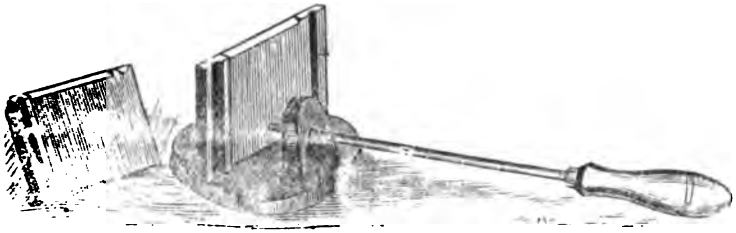
No. 2, New Style.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price • $1.50

SNOWDEN & COWMAN'S

INGOT MOULDS.



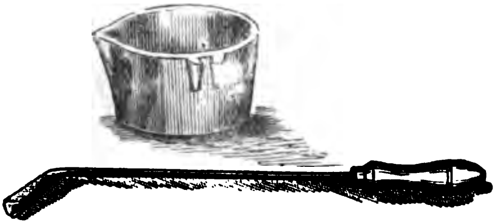
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2.25

No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - - $2.75

No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, - $3.25

LIBERAL DISCOUNT TO THE TRADE.

Ladles and Handles.



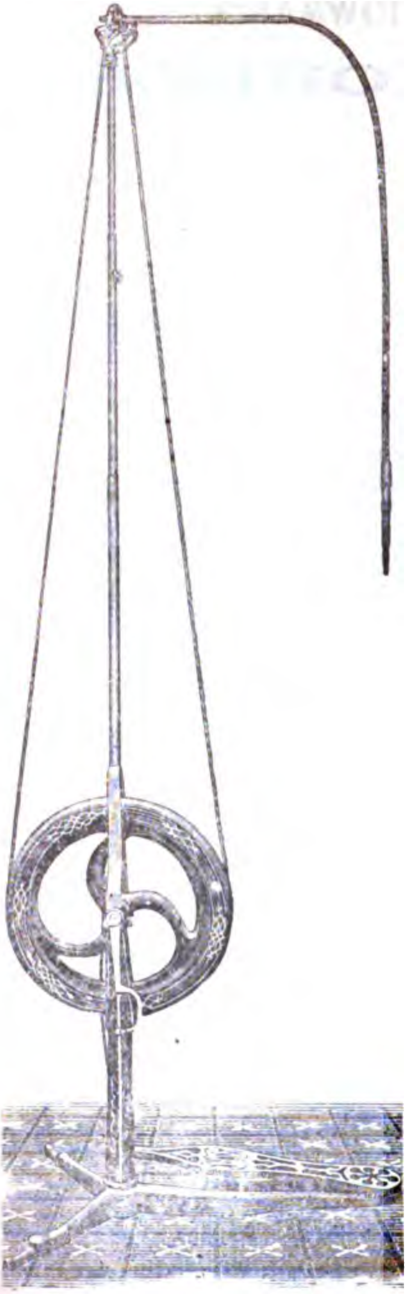
We make three sizes of Ladles; one handle will fit each Ladle and i removed when the Ladle is placed on the fire.

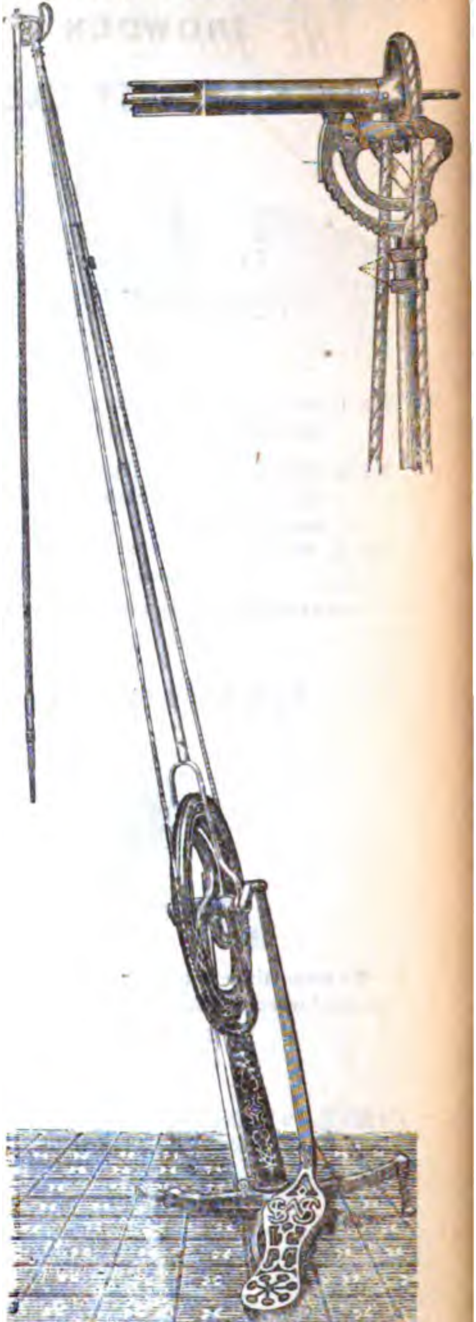
No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4½ " " " 3 "
" 3, " 4¼ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
Nos. 2 and 3 Ladles, without handle, each	25
No. 1 large " " " "	40
Handles of wrought iron, each	25

SNOWDEN & COWMAN,
No. 86 W. Fayette St. Baltimore.

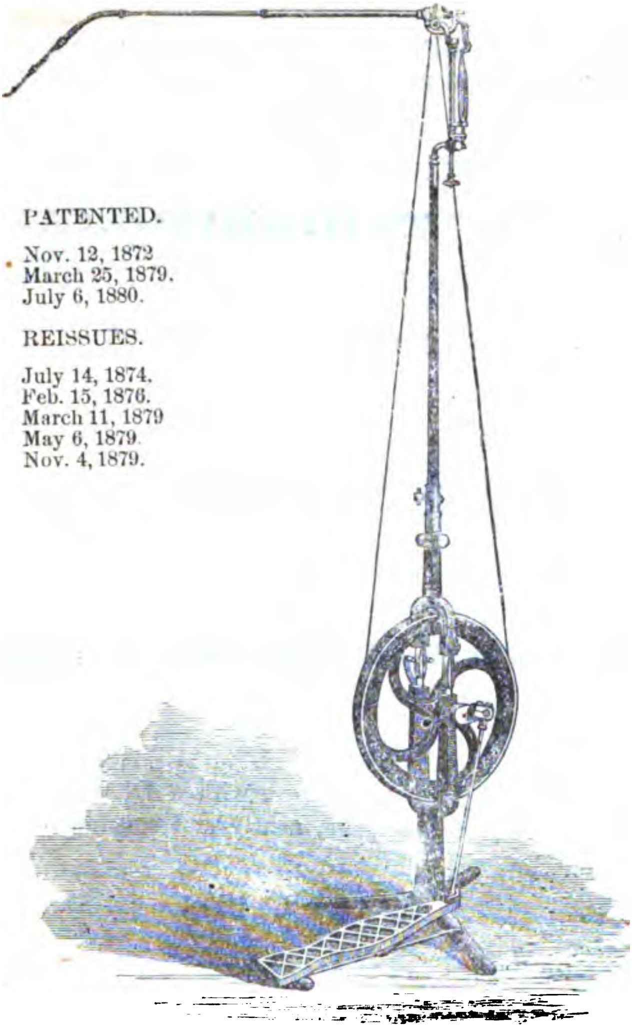
THE S. S. WHITE IMPROVED DENTAL ENGINE.





For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

THE JOHNSTON DENTAL ENGINE.



PATENTED.

Nov. 12, 1872
March 25, 1879.
July 6, 1880.

REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879
May 6, 1879.
Nov. 4, 1879.

PRICES.

Engine	**$40 00**
Boxing	**75**

For Sale By SNOWDEN & COWMAN,
86 West Fayette Street, Baltimore, Md.

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill orders for various kinds of Printing, such as

BILLHEADS, CIRCULARS, LABELS,

STATEMENTS, HEADINGS, CARDS,

TAGS, BY-LAWS, ETC

SNOWDEN & COWMAN,

No. 86 West Fayette Street.

SNOWDEN & COWMAN'S

DENTISTS' CASE BOOKS,

For Recording all Operations in Dentistry,

WITH

TITLE PAGE, INDEX OR ALPHABET, and the pages numbered, printed on fine paper, with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

☞ TRADE SUPPLIED.

SNOWDEN & COWMAN,

86 West Fayette Street, Baltimore, Md.

FOUNDED 1869.

GIDEON SIBLEY,

TRADE GS MARK.

Manufacturer of Manufacturer and Dealer in

Artificial Teeth and Dentists' Materials.

THIRTEENTH AND FILBERT STS.
PHILADELPHIA, PA.

DENTISTS!

DON'T READ THIS!

unless you want to economize in time, and consequently save money. To accomplish this result you must have the best Teeth in the market, and they are

Gideon Sibley's Improved Artificial Teeth.

From this claim we except no make of Teeth, foreign or domestic, and it is daily substantiated by the unsolicited testimonials of thousands of Dentists, many of whom use these Celebrated Teeth exclusively. Sample sets, $1.00. For sale by all dealers. Sample cards and abridged price list free by mail. All orders for Teeth and Dental Supplies will receive prompt and careful attention.

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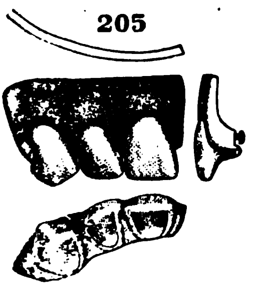

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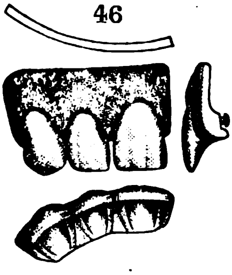

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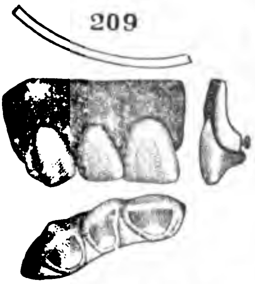

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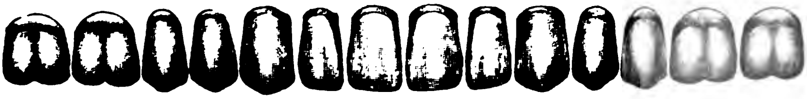

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THE

AMERICAN JOURNAL

—OF—

DENTAL SCIENCE.

VOL. XXII. THIRD SERIES—MARCH, 1889. NO. 11.

ARTICLE I.

HEADACHE FROM EYE-STRAIN.

BY DR. WHEELOCK RIDER, ROCHESTER, N. Y.

[Read before the Medical Society of the County of Steuben, January 8th, 1889.]

That the symptom headache is of the greatest frequency few will deny. A large proportion of those seeking relief from the physician complain wholly or incidentally of headache, and devoid of danger as this disorder may be, its seriousness is by no means to be underated; in the aggregate probably more hours of suffering are annually caused by headache than by any other painful affection; not infrequently it necessitates a retirement from occupation or involves the loss of much time. Therefore, I trust a brief resume of the causal relations of refractive errors to headache, followed by a few illustrative cases, will be of interest to you.

Headache is best considered as arising by the combined existence of a general predisposing condition and a local irritation. Whatever this general condition may be, how brought about, or how continued, it is essentially a deficient resistence on the part of the general nervous system against the exciting causes. The periodically returning headache becomes, therefore, a veritable nerve storm set up by the occasional inability to resist an irritation, which in many instances, is continuously existing.

Both the predisposing condition and the cause of peripheral irritation are often inherited, a clinical fact of real value. Consumption, neuralgia, paralysis, etc., prevail in the family histories of many of these patients, as does strabismus, asthenopia and other evidences of defective vision. Among cases illustrative of this hereditary tendency let me mention one in which the attacks were very frequent, regularly recurring, severe headaches, accompanied generally by nausea, and the individuals affected were: mother, three sons, one daughter, two grandsons, and two granddaughters; in all the attacks were of a similar nature.

A word regarding supposed causation. There is rarely such uniformity among the laity in medical matters as is found in questioning these sufferers as to the supposed origin of their attacks. If it is not the liver to which the trouble is attributed, it is the stomach. Aside from the clinical evidence to the contrary it is extremely improbable that either of these organs can so universally be at fault. The idea arises in all probability from the observation that gastric function is imperfectly performed, and that vomiting frequently occurs during attacks. Much as in sea-sickness, the symptom so prominent is an effect, yet popularly the suffering member is credited with the offence. On the other hand the liver is a good scape-goat, its condition can not be easily demonstrated; appearance of bile in the stomach contents, resulting from prolonged vomiting, might also give rise to the belief that a disordered liver is the exciting cause.

Considering briefly the symptoms of sick headaches, it will be noticed that the special senses are abnormally acute;

slight, and especially unpleasant odors are recognized with unusual promptness, hearing acuity is intensified, or rather, there is apparent hyperæsthesia rendering loud sounds very painful sometimes, and photophobia is very commonly present. Along with hearing may be mentioned the naturally associated vertigo, and subjective noises. Position most generally assumed therefore in severe attacks, is the horizontal one, in a darkened quiet room.

These few points are taken as bearing especially upon the particular cause I am to consider. Their incompleteness is, therefore, excusable. Let me recall briefly to your mind some matters in the physiology of vision.

During waking hours the eyes are at no time at rest; their eighteen muscles demand innervation sixteen hours daily. The slightest inequality of tension of the muscles governing the motions of the eyeballs produces marked discomfort, if uncorrected, double vision and vertigo, for the image of every object viewed, must, to be a clear one, fall directly upon the yellow spot of the retina; when both eyes are used—upon corresponding points. The smallest variation from the proper tension of the ciliary muscle on the other hand is productive of an indistinct image upon the retina, to avoid which, no effort seems too great.

In the normal eye, only parallel rays of light, those coming from a distance of about twenty feet or more, are focused on the retina. All clearer vision of nearer objects is the result of a greater or less amount of accommodative effort—the contraction of the ciliary muscle. But in viewing such near objects the visual axes cease to be parallel—the axes of vision converge toward each other—and this convergence of the visual axes sustains a definite relation to the amount of accommodation required for the given distance. An object at one foot requires a certain amount of effort of the ciliary muscle and a corresponding amount of effort of the internal recti muscles. At two feet both are changed in degree, but the same relation still exists. Nowhere else in the body is such exact relation muscular effort, such delicate adjustment required, and as habitually practiced.

The organ of vision in its more highly developed form, is the only organ in nature where perfect functional activity depends upon exact form—this is by reason of its dependence upon the laws of the refraction of light. The leaves of a plant or the teeth of an animal may be longer or shorter than the average and still each may be functionally perfect. An eye that is longer than the focal length of its refractive media is near-sighted and unable to conform completely to the requirements of the vertebrate eye. When too short it is over-sighted; here it can only be effective by exercising an effort of the ciliary muscle for distant vision —where the accommodation should physiologically be relaxed, and by excessive strain of the ciliary muscle when it is used for near objects. When irregularly curved, or where the ciliary muscle is irregularly exercised, its vision can be perfect only in exceptional cases. This latter condition is astigmatism.

Knowing as we do, the tendency to variation of form in nature, is it to be wondered at that abnormal optical conditions should so frequently be found, especially as we are able to put the eye to such a searching examination, that the slightest errors become manifest? As a matter of fact less than eight per cent. of a large number of eyes examined, were found by Randall strictly normal, optically.

Bearing now in mind the relation between convergence of the visual axes and accommodation, we see that hypermetropia at once introduces a disturbance of these relations. In distant vision with parallel axes the hypermetropic eye must accommodate—but parallelism and accommodation do not go together physiologically. In vision of near objects, also, as is readily seen, accommodation out of pro portion to convergence exists, and the reverse obtains in myopia.

In the condition of regular astigmatism, one meridian is optically correct while another is not, or, both are at fault in different degrees, and the effort which corrects the one cannot correct both. All meridians cannot at once comply with the inviolable laws of light, expecting by an irregular contraction of the ciliary muscle—a feat of endurance.

In simple over-sight, then, the individual must:

I. Overwork constantly the ciliary muscle.

II. Violate at all times, the relation of convergence and accommodation.

When the patient has eyes of unequal refractive power —if he attempted binocular vision, he must be constantly striving to do what is next to impossible; correct at once, with the same force, eyes requiring different degrees of correction, else he must combine in the visual center a clear and an indistinct image.

In the case of astigmatism the individual is in a constant perplexity. No one effort of the ciliary muscle corrects for all meridians, and so this annular muscle is either obliged to contract irregularly or be constantly fretted by the demands made upon it. The convergence—accommodation relation is here also disturbed as is readily seen. The practical truth of these statements is nicely illustrated by the common defect of convergent strabismus. This, in the majority of cases, is a result of oversight or of defective vision of one eye. In the former case, the effort of the convergence-accommodation relation becomes so arduous that binocular vision is surrendered, as a lesser evil. If vision of one eye be markedly defective the organ is put in the direction of least resistance, and out of the way.

The patient never having enjoyed vision which is normal in acuity or ease, is generally ignorant of his defect. This is absolutely true in the majority of cases, though at first glance improbable.

Assuming now that a relation exists between the generation of nerve force, and its consumption in the exercise of duty of the parts of the organism, it would follow that an abnormal organ demanding, as it would, increased expenditure of nerve force to insure its physiological activity, would introduce an element of disturbance in supply and demand—and that where the demand exceeded the supply, symptoms such as headaches or neuralgias, might be developed as reflex symptoms of peripheral irritation.

The eye seems to be especially apt to introduce this disturbance by reason of prolonged constant use made of it, its tendency to fall short of its anatomical requirements, and the extreme nicety of adjustment demanded of it. As a clinical fact, however, defective teeth are a frequent cause of reflex irritation, and this appears to be more generally recognized in every-day treatment. So good an authority as T. Lauder Brunton states.* "The chief local causes are decayed teeth and abnormation of the eye." He narrates the case of a professional man who went upon a continental tour seeking relief from a headache incapacitating him from work. On his return, percussion of his teeth revealed one slightly carious and treatment of this immediately gave relief. In several of my own cases a relapse has been found to have resulted from the irritation of carious teeth of themselves painless, but the cause, in strict truth, of toothache in the back of the head.

CASE I. Emma B., 21 years. Headache during childhood and school years. Gave up school because of headaches. Discovered while a child that glasses improved vision, and wore her mother's spectacles to improve her sight evenings, but her severe headaches were unaffected. Heaches are now developed during the day; pain across forehead and through temples. Nausea always, vomiting sometimes. Has been occupied six years in various department of book-bindery. Sick-headaches several times a week, lately daily. Never suspected eyes to be the cause of headache. No asthenopia during the day, only by artificial light.

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* "On the Pathology and Treatment of Some Forms of Headache." St. Bartholomew's Hospital Reports, Vol. XIX, 1883.

Vision right eye, 16-30, vision left eye, 16-80. With the ciliary muscle paralysed by a two per cent. solution of homatropine and cocaine, vision right eye, 16-50, vision left eye, less than 16-200.

Vision right, is 16-16 when corrected by + 2.75 s. ⊂⊃ + 1. c. 70°.

Vision left, is 16-16 when corrected by + 1.50 s ⊂⊃ + 1.25 c. 95°.

These lenses were ordered for all close work; complete relief has followed for the six months which have since passed. On one occasion, when deprived of her glasses for three days, a return of headache, severe in character, was noted.

The patient, whose history I now give, seems to have suffered severely from as slight a defect as is usually met with.

CASE II. C. N. W., 21 years, has always had headaches; remembers the interruptions in going to school when five or six years of age by reason of their occurrence. Attacks begin with blurring of vision, shortly followed by intense pain through temples and in occiput, with nausea and frequently vomiting. It matters little to what use the eyes have been subjected, whether to distant or near vision. Latterly he has wakened with headache. Pain will invariably follow an hour's close application. In driving along a country road the train of symptoms, as like as not, will set in and he will be obliged to get out of the carriage before vomiting begins. The most effectual treatment which he has discovered is the recumbent posture in a darkened room, with mustard foot-baths, and ice-bags on the head; has been confined many days at a time in this manner. He has consulted numerous physicians, but with no relief and has given up the study of a profession as impossible.

Was examined March 30, 1888. Vision 16-24 normal, with + .75 c., right 30°, left 150°; these lenses were ordered for constant use.

Four weeks later I found he had worn glasses with the greatest relief; had read six hours without producing discomfort; distant vision was steadier and head felt uniformly better. In a letter received from him eight months after he was first examined, he states: "It has now been five months since I have had a headache and I have had but three light attacks since I have worn the glasses." I may state that no other treatment was undertaken.

This patient believing his eyes normal and his liver rebellious had instituted a habit of diet marked by its frugality, which he believed to have lessened his attacks. Armed with his glasses I presume he is now omnivorous.

CASE III. Mr. H., a lawyer, about 45 years old, and in good general condition, became subject to attacks of headache about ten years ago. Both frequency and intensity gradually increased. The headache was liable to set in at any time, especially after close use of the eyes or after a walk in the bright sunlight, and the duration of an attack was variable. Nausea and vomiting later became prominent features in the case. Recumbency in a dark room with ice-bags on the head served to give some relief. His business was seriously interfered with and medical treatment had been of very little benefit, excepting to mitigate the severity of pain during attacks.

His eyes were examined in May, 1887. He was found to have a slight degree of astigmatism in the right eye, but a marked degree in the left one; the following correcting glasses were ordered for constant use:

Right eye, + .50 c. 90°.
Left eye, + 2. c. 90°.

During the twenty months which have passed since he began the use of glasses, he has not had a headache. No other treatment has been employed. Premonitory symptoms have appeared when at various times he has forgotten to put on his glasses before dressing in the morning.

This case exhibits a feature seen in many others, viz., the attacks were readily brought about by exposure to bright sunlight and sunheat. I have met with patients who referred the onset of their trouble to "slight sunstroke," and who thought themselves suffering from repeated mild insolations.

CASE IV. This case occurred in the practice of my friend, Dr. C. A. Dewey, who in sending the patient for examination furnished me the following notes:

"Kate D., 23 years old, single. Mother had paralysis at the age of 36. Has never been thoroughly well; had series of about 30 abscesses before the 18th year, which have scarred the left side of her neck. Seven years ago had rheumatism in ankles and wrists. Menstruated at 21, regularly; some pain in back and in ovarian regions. Bowels regular, urine normal. As a child was kept from school by sick-headaches. *Has always had neuralgia in right eye and forehead. The greatest length of continued freedom from this pain has been but a few weeks.* Uterus low, retroflexed, bound down by adhesions."

I found on examination, April 24, 1888, vision nearly normal. Under homatropine mydriasis, the following glasses were found necessary to produce normal vision:

Right eye, + .50 sph. ○ 1. c. 90°.
Left eye, + 1.25 sph.

Ordered for constant use:

Right eye, + 1. c. 90°.
Left eye, + .75 sph.

For close work a weak prism (2°) was afterwards ordered in combination with the above, base inward.

This case is characteristic in that the pain was persistently located over and above the astigmatic eye. In the prescription an allowance for accommodative tension was made as is frequently desirable by omitting .50 D. sph.

This patient is of an extremely nervous disposition; largely confined indoors, and a recent attack of neuralgia had lasted several weeks when she was examined.

In this case the constant effort to correct a congenital optical defect induced the constant neuralgia of the ophthalmic division of the trifacial. No medication was used, the only other treatment being, latterly, application of a pessary.

Patient now is unable to dispense with the correcting glasses without evidence of the return of the habitual pain. Her efforts to obtain relief had been constant, but fruitless; no examination of the eyes had been suggested by the many physicians whom she had consulted, nor had she ever suspected defect of vision.

CASE V. Fannie M., 18 years, student. Headaches since earliest recollection. Severe sick-headaches brought on by any slight nervous excitement or close work; the excitement of attending places of amusement, receptions or in entertaining company provoked an attack; always considered delicate. No physician had ever suspected eye-strain. Two years ago suffered an extension of trouble down into neck and shoulders with pain and stiffness of these parts. At one period lost a number of days weekly by reason of her trouble, discontinued school for two months for same cause. For two years has had headaches daily, rarely vomiting, but nausea not infrequently. Pressing pain in vertex and across forehead; a tender spot on vertex makes combing of the hair painful.

Vision, each eye, 16-16, under homatropine, vision sub-normal; + .75 c. 90°, each eye, perfects it. Has had no further trouble in about six weeks following correction of the slight hypermetropic astigmatism. Occasionally wakes with headache which disappears shortly after putting on glasses. Has had a few repetitions of the trouble, but only when the glasses were not worn. No other treatment.

An uncorrected error of refraction will produce localized tenderness in various parts of the surface of the head. The wearing of weak convex cylindrical glasses, unsuited to the case, often produced in a few hours extreme tenderness in the center of the forehead, in a patient that came under observation. I repeatedly produced it.

I think the following case is interesting in view of the slight optical error which has produced such life-long discomfort.

CASE VI. Mrs. P., 24 years, married, no children. Examined February 18, 1888. Has been subject to a slight constant headache since earliest remembrance, location is described in my notes as "all over the head, sometimes above forehead." Has always considered her eyes perfect, expecting, when as she thought, the headaches of unusual severity caused a blurring of vision. Vision both eyes 16-12, accepts on a preliminary examination a weak convex lens (+ .50) under homatropine, vision slightly sub-normal, raised to normal in each eye with + .50 c. 90°. This was ordered for constant use. They have been worn nearly eleven months; vision with them is no sharper than without, in both cases being perfect, but ease of vision with the glasses is marked. The relief from constant headache was immediate and permanent.

In such cases as this it might be suggested that relief followed correction, by chance only; that the conclusion is not reached by insufficient induction is shown by ordering discontinuance of the glasses—pain is found to return in the habitual manner. This was once the case in my office while this patient was awaiting examination of a sister with a similar complaint. I removed the glasses for another patient's use; when I returned them a short time after, she assured me that her head was aching.

CASE VII. F. A. P., 35 years, groceryman. Is sent for examination by family physician, with a history of intense pain in head associated with vertigo. Trouble has existed nine months. It begins usually, not always, after close use of eyes, with blurring of vision then intense pain and *such dizziness as to cause a staggering gait, simulating intoxication if patient walks in the street.* No nausea. Never noticed defective vision.

Under homatropine, vision right, 16-40; left, 16-80.

Vision normal with + 1.50 c. 90° each eye. With this correction for close work only, ***absolute and immediate relief for* 21 *weeks*.** An occasional headache, not at all severe, now appears, and the patient is at present under observation. Either further correction is needed, or dental or other irritation is present.

No thorough examination of the refraction can be made in persons of an age under 40 years, without previously paralysing the accommodation. If this be left undone the results may be in some cases correct, are in many entirely misleading—in all, doubtful. The involuntary contraction of the ciliary muscle being the only element of uncertainty, as soon as it is eliminated, the problem becomes a very simple one. Small convenient test-cases of lenses are sufficient to enable any physician to establish beyond doubt refractive errors in such cases as come under his care. Many instances occur where special experience may be needed, however, to properly correct them.

This whole subject is no novel one; but it may be that of late it is being more habitually recognized by the profession, and neurologists especially. Brunton states, "In treating any case of headache, the first thing to do is to see whether the teeth are sound and the eyes normal." Again, "It would be going too far to say that frontal headache is always due to an abnormal condition of the eyes, but I believe it is so much more frequently that one would at all suspect."

The satisfaction with which I consider a considerable series of cases, of which I fear I have here detailed too many examples, is only equaled by surprise that the true character of the trouble has been recognized in so few instances; not until almost all other means had been tried over and over again.

To formulate briefly the subject-matter of this paper:

I. It matters little what be the occupation, sex, age or apparent perfection of vision of a patient, the eyes may be the cause of the headache or neuralgia, and the burden of proof lies on the other side of the proposition.

II. If an optical condition requires such effort, with its resulting irritation, as to produce the reflex it must be completely relieved, bearing in mind that a mydriatic is necessary in examination, and then the cure will be brilliant.

III. The most common origin of reflex irritation from eyes is oversighted astigmatism. The recent statement of a noted French authority, in publishing a series of several hundred of these cases, goes, as far as I can learn, unchallenged: "Astigmatism should be regarded as an almost universal cause of migraine."

IV. Blurring of vision at any time during an attack should immediately lead to an examination of the eyes.

V. The predisposing condition may be overcome, but for time being only. The local irritation, if eye-strain, can be overcome; and this is permanent.

This may all be familiar ground to you. If so, you can pardon the enthusiasm which leads a prominent neurologist to say, "I have never seen a case of typical sick-headache where the eyes themselves, or the eye-muscles, were not at fault."—*Odontographic Journal.*

ARTICLE II.

HISTORY OF DENTISTRY.

The November meeting of the Rochester Dental Society was held at the office of Dr. W. F. Arnold, who entertained the Society with the following paper:

History is ever repeating itself in different forms. Since the human race has reached in its evolutinary development up to the eruption of teeth, some kind of dentistry has been needed.

Dentistry is named from the Latin word dens, a tooth.

There are shells and plants named dental from having points in structure like the tooth.

Dental Surgery, so far as we have been able to learn up to the present century, was a very crude performance.

And the theory of dental caries equally crude and amusing. The care of the teeth was but little known and what literature we had on the subject was very entertaining from its embryotic condition.

Ambrose Pare said in his treatise on surgery that a man should so carry himself that he did not in pulling teeth pluck out two teeth for one.

While Prof. Darby was traveling in the East he had a Bedowin Sheik walk fourteen miles to have a tooth extracted by him. He sat on a keg outside of the professor's tent and had the operation performed, and really seemed to enjoy it. The custom in that country among the tribes is to have the muleteer perform that branch of surgery; in which they become quite skillful. They take a mallet and a chisel. The patient opens his mouth and the dragoman puts his punch or chisel down close to the gum and drives out the tooth with a smart blow of the mallet.

In China tooth pullers are trained from early youth to do it with their thumb and first finger. They are taught to pull nails out of boards and by this continued practice get great strength of muscle, and perform this surgical operation very dextrously. Much of their medical and surgical knowledge is not up to this standard. Persons suffering with pains in their head or face will go to one of the native doctors, who, for the most part, are sorcerers or magicians, who interpret dreams, tell fortunes and find stolen goods. He will tell his patient that there are worms in his brain or head, and that they must have a chance to crawl out, so that he will have to make a hole in the head, either through the ear or eye, and whatever organ the person so applying for relief chooses is punctured usually without any relief, so that in China many are deaf and blind.

In 1541 a little book was published with XIII.

chapters, on the care of the teeth. One statement is, that few have, instead of teeth, a whole bone to chew with. It states that in old age people lose their teeth and new ones grow. It give an account of Zankelin, who got some teeth at the age of one hundred and four years. And it further says, his brother never lost his and did use them up completely. I will state. that I, several days ago, removed the roots of a whole set of teeth from the mouth of an old lady who had used her's up so completely that not a crown was left on any root. I should judge she had never had a tooth pulled, but let one after another decay down to the gum, till it was necessary to remove them on account of their ragged edges irritating the gum and causing inflammation. The authority I have just spoken of says that vomiting injures the teeth. Also hot victuals burn the teeth and can not be taken without hurt; also, never go to sleep after a meal for this damages the teeth. In speaking of teething, the author says children's gums should be bathed and rubbed with chicken, goose, or duck fat, or the brains of a hare may be taken and rubbed over the gums, mixed with the fat spoken of, and after this wash the head and face, also the neck with tea made from melilot, mallows, chamomile, cubebs. When the teeth break through a little wool from under the neck of a sheep nicely dipped in cubeb oil or chamomile laid warm on the gums and jaw.

He also teaches when the first teeth drop out the new ones should be pressed into the place of the old till it sets there among the others.

On Odontalgia. The same author says: "No one knows what toothache is better than he who has had it. Cure is to bleed and cup and to open veins such as the cephalic or those under the lips and tongue, or purging; or take the skin of a snake, boil it in vinegar and hold it in the mouth, that is very good. There are many other things equally good as those named which your time and patience will not permit, as I must hasten on to the main points in the history of our profession."

Heroditus first mentions dentistry (500 B. C.). The Egyptians were the most advanced. Teeth filled with gold have been found in the mumy pits. A collection in Liverpool contains specimens of artificial teeth, and two teeth of Sycamore wood set in gold. It is thought by some that it is only a kind of decorative gilding done in honor of the dead.

Celsus lived about (100 B. C.) and first recommended the use of the file for removing decay and sharp projections on the teeth. After this writer little is said about the teeth until the fifteenth century, and from that on to the present time. The latter part of the eighteenth century the anatomy and physiology of the teeth was very nearly as well known as it is now.

In 1774 and 1776 mineral teeth were first introduced into France. Previously to this elephant and hoppopotamus ivory, and animal and extracted human teeth were used. The base as well as the teeth were carved from ivory. Wooden bases were sometimes used. The workmanship on these dentures were crude and the plate ill-fitting, So that Washington could justly say of his teeth that they were an infirmity. These dentures were held in place with spiral springs.

Tooth extraction was the principal part of dentistry and was performed by the family doctor or barber. The turkney was the principal instrument used and the doctor, with a red bandana handkerchief, which was not always clean, with which he made a sort of cushion for the key turned the teeth out of many a suffering mortal.

In 1766 Mr. John Woofendale was the first educated dentist in this country, having been instructed by Thomas Bedmore, dentist to Geo. III. He practiced in New York and Philadelphia and then returned to England.

The fathers and founders of American dentistry were Joseph Lemaire, a Frenchman, who was quite successful in transplanting teeth. He instructed some two or three persons. This was the first commencement in this country of educated dentists. Isaac Greenwood and son, John Greenwood, were the first dentists in Boston. John constructed the first artificial denture for George Washington. This was somewhere about 1784 or 1785. Josiah Flagg, one of Lemaire's pupils, began business as an itinerant, and was properly our first American dentist. Dr. Flagg transplants teeth, cures ulcers and eases them from pain without drawing, fastens those that are loose, mends teeth with foil or gold to be as lasting and useful as sound teeth and without pain in the operation, and secures them in a lasting, independent and serviceable manner; sews up hair lips, and fixes gold roofs and plates, greatly assisting pronunciation and swallowing; cuts the defect from teeth, restores them to whiteness and soundness, without saws, files, acids, and such abusives as have shamefully crept into the profession, and have destroyed the confidence of the public. Sells by wholesale and retail, dentrifices tinctures, chewsticks, masticks, teeth and gum brushes, suitable for every age, complaint and climate, with directions for use.

James Gardette practiced in Philadelphia. He was one of the best early American dentists, he practiced forty-five years. The first plate with atmospheric pressure as a principle is attributed to him. He substituted gold foil for lead in the filling of teeth.

Dr. John Greenwood was the first, so far as is known, to pierce the maxillary sinus. He did this by removing a molar tooth and made the cavity or opening through its socket, and thus treated the disease and cured it. He became celebrated as a surgeon, and is supposed to be the first in the United States to strike up a gold plate for the base of an artificial denture. He is best known as being the dentist to the President of the United States, George Washington. He made several sets for this eminent gentleman, one of which is now in the possession of Dr. John Allen of New York. This gentleman wore as a watch charm the last natural tooth of George Washington.

Time would fail us to speak of all the grand worthies who have contributed to make our profession what it is. We will just name them and hurry on. Horace Hayden, who published many papers on dentistry and gave a course of lectures to the medical students of the University of Maryland on Dentistry. He petitioned the legislature of Maryland for a dental college with several others. He was located at Baltimore in 1804.

Edward Hudson, who practiced in Philadelphia, attained great eminence in the profession, and proved by his excellent work that the natural teeth could be saved. E. Parmley said we are more indebted to him than any other man, for his success and the importance attached to saving the natural teeth.

To John Randall, of Boston, we are indebted for the skill which he displayed in the turnkey and forceps, long before they were articles of merchandise.

Lemard Keocher, of Philadelphia, became so eminent in practice that his income was about $8,000 per annum. He picked up the business. His first case in Philadelphia, of simple extraction, occasioned him much embarrassment. He grasped the tooth with an instrument, shut his eyes, and turning his head from the patient made a strong effort which dislodged the tooth—he being mean while under such excitement that he knew not whether the tooth was out or the jaw broken. The patient assured him he had never had a tooth extracted so easy before. Keocher was so pleased at this triumph that he dates his snccess from this point. He published a work on Dental Surgery in London, 1826, and his treatment of the dental pulp has been accepted by the best authorities. From having no teachers he became a teacher, and is worthy of great credit and honor.

The growth of inventions and dental materials has been very great in the last century and our knowledge of theory and practice has had an equally healthy growth. From the most meagre beginnings great improvements have sprung. The first teeth were human teeth, animal teeth, those of cattle and sheep, hippopotamus' tusks and teeth, elephant and other ivories, bone, etc. There were serious objections to all these, and then came the porcelain, which were plain white teeth, then the shading to match the natural teeth, with plain pins, which were bent, and the pins with heads. Many dentists displayed much art and skill in the early carved teeth. As it would well repay any one to read the history and growth of porcelain teeth.

Dr. Elias Wildman, of Philadelphia, began his experiments in 1837. He produced such results in life-like appearance as had not been obtained before and remain unexcelled to the present time. His principal success was in uniformity of gum enamel, to him must be the honor for reducing the manufacture of teeth to a scientific basis. We all know where the best teeth can be found at the present time. Bases have been of platinum, aluminum, tin, silver, gold, rubber and celluloid.

To Dr. Bean belongs the credit of the aluminum base, 1886. Dr. Geo. E. Hawes the poured tin base, 1850. To Edwin Truman the gutta percha base. To Nelson Goodyear the vulcanite base, 1851. To Messrs. I. S. Hyatt and J. W. Hyatt, celluloid, 1870. To M. L. Loomis' porcelain base, 1854. We all know the comparative value of all these and the survival of the fittest gold, platinum, vulcanite and celluloid. The methods of retaining dentures in the mouth by ligatures, clasps, springs and atmospheric adhesion will not require extended statement. The methods of pivoting we are all familiar with. And the best methods are the ones that live.

In taking impressions wax was the first used, then plaster and compounds. Swaging dies were made of zinc, lead and tin, the former being used.

The history of operative dentistry would take more time than our paper could do justice to.

Filling materials and instruments all have their inventors and special advocates, and all have some claim to notice if not merit.

The formation of dental societies and the establishment of schools to teach dentistry would all claim a share of recognition in this paper, which time will not permit.

The history of Anæsthetics is very interesting as telling how Dr. Wells, of Hartford, in 1844 got his hint, which led to the new era in tooth pulling by nitrous oxide. Sulphuric ether, as introduced by Jackson and Morton, together with chloroform, are two of the anæsthetics that made their advent about the same time and have proved a blessing to the race. Local anæsthetics have some claim to notice but time forbids a history of them now.

The materia medica of dentistry has steadily grown from a few remedies up into the hundreds, and every dentist has a few standbys and lets the world wag on.

Extraction, transplantation and replantation have their advocates, and as the problem is not solved I will leave them as an open question, simply stating that the first two are among the first steps of dentistry.

In this paper I have been only able to casually look along the line of growth and see that as a whole it has been sure and healthy. We have made some serious mistakes and have taken some backward steps and have had many failures, but in spite of all this we are making advanced strides and are becoming a more learned and scientific profession.

Forty years ago we had no dental schools now we number nearly as many schools as years named. We have the best facilities that the ingenious brains of all nations can produce.

In many states we have dental legislation and laws. We have good dental literature and periodicals, and if we can believe the signs of the times we bid fair to be one of the leading and most useful professions. There are many worthies I have not mentioned, such as Parmley, Townsend, Harris, Arthur and a host of other good men who have gone on to get the rest of their reward. I am sorry that this paper is so fragmentary and incomplete, but from the nature of the subject it could not be otherwise.*—*Odontographic Journal.*

ARTICLE III.

FAITH HEALING.

BY PARSONS SHAW, D. D. S., MANCHESTER, ENGLAND.

As the effect of prayer upon pain has been definitely alluded to in the *Archives*, although the subject presents many difficulties, perhaps I shall not be out of place in 'offering some suggestions, and in putting forth what seems to me to be the line of thought which leads to the scientific investigation of this and kindred matters. I know there are a great many people so constituted that they instinctively resent almost any enquiry into what appears to them to be a mystery; but, on the other hand, there are so many more who reverently think that all things are governed by immutable laws which can not change or be changed, because they have their origin in a source that is divinely good and divinely true, that their views have a claim for hearing. Not that I am going to oppose the reality of what are known as "faith cures," but only to suggest how it may be possible for them to be effected in a perfectly natural manner. (N. B.) We are told on the best authority that we are to "Judge not according to appearance, but to judge righteous judgment." This is a fundamental law in all investigations, although it attracts but little attention. The ancient world thought the sun went round the earth, but we have since then judged *righteously*,– that is, according to what is *right*,—and now know that we were deceived by appearances. And so in regard to a thousand other matters. We were all in a fog in regard to the origin of different species, and kindred subjects, until Darwin pointed out the way by which we could judge according to what was right. Is there nothing that will guide us in forming a right judgement in the matter of "faith healing?" I think there is, and that the subject is mastered when we thoroughly comprehend the scientific meaning of the two terms "objective" and "subjective." According to Worcester, *objective* is something "relating to the object of the thought, and not to the thinker." While "*subjective*" is something "relating not to the object, but the subject; relating to the conscious subject; not objective." And then, quoting Brande, a fuller explanation is given. "*Subjective* and *objective* are terms expressing the distinction which, in analyzing every intellectual act, we necessarily make between ourselves, the conscious *subject*, and that of which we are conscious, the *object*. For the distinction between subject and object, all-important in intellectual philosophy, and the neglect of which has been the cause of infinite confusion and perplexity, we are indebted to the schoolmen, from whom it was derived, through Wolfe and Leiblitz, by Kant and the modern German philosophers." The statement of this distinction by Kant seems to be that which is best known. But a host of thinkers did their best long before the German philosophers and Kant, to "make all things new" in the world of thought by showing that man saw everything from a wrong point when he took the objective view solely.

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* The credit of this paper is due to the Academy of Dental Science (Philadelphia) for its facts —W. S. A.

But intellectual growth is a very slow process, and it is only within the last few years that there has even begun to be a general acceptance among philosophers of the doctrine that the subjective view of natural phenomena is the one to reveal the secrets of their origin. The consequence is that the usual set and accepted phrases by which ideas are conveyed have not yet been framed for this doctrine, and it is, therefore, extremely difficult to convey an idea of subjective action. But I think that most dentists have the experience which will allow me to treat the matter with some degree of success. When a man (masculine) comes for consultation and is told he must have a tooth out, my experience is that he will either decline altogether or say "very well," or something like it, take hold of the chair, brace himself up, and submit to the operation at once. But what would be the effect if the dentist said nothing, took hold of the tooth without any warning to the patient and before he had "braced himself up?" He certainly would feel more pain. Then what takes place in the patient to make him bear the pain? It must be that some subjective influence has been at work upon his sensor nerves; for everything that is objective, the dentist and the forceps, remain the same. But when a woman comes under the same circumstances my experience is quite different. She will never willingly have the operation performed there and then, as the man does (if at all), but says she will wait until she can "make up her mind about it." Now, what does she mean by "making up her mind?" The answer is, as before, that she unconsciously brings to bear some subjective influence until she finds she can endure the pain; so that when she comes to have the operation performed she does not feel it as much as she otherwise would have done. Or, to put it in other words, in two different ways, according to the sex, by an effort of the will the sensor nerves seem to be acted upon and rendered less accute. On the other hand, we know that these nerves may be rendered abnormally accute by fright or any other exercises of the fear that great pain in is going to be given. The first intimation that I had that the will could produce absence of pain, was in what is now Portage City, in Wisconsin. I was there in 1852, and the Indians had just been removed. A party of both Winnebagos and Minominees had returned to the old place for a "drunk." The men got drunk on one day and the women on the other. Unfortunately it was "drunk day" for the women of both tribes, on the same day, and two squaws got into a fight and one was very badly wounded with a knife. Her wounds had been dressed as best her friends could manage, but she suffered great pain. She appeared not more than sixteen years old, and as she sat on a log giving way to moaning, some old Indian would go by and, giving a grunt, say something I could not and yet could understand, for her face would at once assume a calm expression as if she felt nothing, and this she would keep up for from ten to twenty minutes, when nature would again assert itself. I watched the girl for some hours, and learned a lesson never to be forgotten. *She had the power of controlling for a time the action of her sensor nerves.* And does not this explain the reported stoicism, or indifference to pain, the Indian is credited with? And why should not every living being be able to wholly control the action of his sensor nerves as he is undoubtedly able to partially control them? And in what but practice is the difference between controlling the action of tne sensor and the action of the motor nerves by an effort of the will? In after years I owned a wild mare caught on the plains, and this beast was another wonderful studv. She would go splendidly when it was the way she wanted to go, but would creep along in any other direction at a pace I do not care to risk my reputation for truth and veracity by attempting to describe. On one occasion I completely lost my temper and punished her severely; when, catching her eye, I saw the same expression I had noticed in the Indian girl. Anger turned to wonder, and I made that mare a study. From that, and much other experience, I became satisfied that animals can protect themselves from pain by subjective influences. Perhaps it will not be admitted that Dr. Livingstone, when shaken by the lion and had all the fear taken out of him, was under subjective influences; but his, and other similar cases,* and the curious habit of all the feline tribe in giving their victims a good shake when they capture them helps my argument. The experience gained in the two above-named cases has proved of great value to me in administering the anæsthetic gas; for I find that unless the patient has "made up" his or her mind (or, in other words, produced more or less of what I have termed *mental* anæsthesia by an effort of the will) the gas is not a complete success. I never, therefore, undertake to push this agent upon any patient who is unwilling, or even uncertain, but wait until he has induced the right state of mind for taking it. In many ways does the subject exercise control over the action of the sensor nerves. How often do we count ourselves to sleep, when some disturbing state of the nerves keeps us awake? This process is akin to the one which produces what Dr. Braid, with whose experiments I was somewhat familiar, called *hypnotism*. Some produce this state more easily than others, and some are unable to produce it at all. If a susceptible subject places any object where he can concentrate his gaze upon it for a length of time, he will eventually fall into a hypnotic state. I have seen it produced on a public platform by the subject looking steadily at a coin placed in the palm of the hand. Hypnotism is also unconsciously produced in various other

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* Sir Lyon Playfair, in a letter to Junius Henri Brown, author of a paper in the New York *Forum*, for October, says: "I have known three friends who were partially devoured by wild beasts under apparently

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hopeless circumstances of escape. The first was Livingston, the great African traveler, who was knocked on his back by a lion, which began to munch his arm. He assured me that he felt no fear or pain, and that his only feeling was one of intense curiosity as to which part of his body the lion would take next. The next was Rustem Pasha, now Turkish Ambassador in London. A bear attacked him and tore off part of his hand and part of his arm and shoulder. He also assured me that he had neither a sense of pain nor fear, but that he felt excessively angry because the bear grunted with so much satisfaction in munching him. The third case is that of Sir Edward Bradford, an Indian officer. now occupying a high position in the India Office. He was seized in a solitary place by a tiger, which held him firmly behind his shoulders with one paw and then deliberately devoured the whole of his arm, beginning at the end and ending at the shoulder. He was positive that he had no sensation of fear, and thinks that he felt a little pain when the fangs went through his hand, but is certain that he felt none during the munching of his arm."—*Scientific American.*

ways. When it is avowedly produced it is usually regarded by the spectator as some trick; but when it comes to certain people in favorite ways, they are apt to imagine it is but little short of, if not actually, some special revelation. Now, in my opinion, both the miracle lovers and the scoffers are wrong. There is not a doubt that a great deal of what goes under the name of "spiritualism," "magnetism," "clairvoyance," "hypnotism" and kindred names is conscious trickery, and always has been from the days long before when the Roman Augers laughed in each other's faces when they went through the routine of their calling down to the modern showman; but, as I understand this matter, there has always been and yet is, just enough of the genuine, but hitherto unexplainable phenomena coming in to puzzle and mislead the deceived and to give some confidence to the often unconscious deceivers. Hypnotism (I use this word, coined by Dr. Braid, not to provoke controversy over what has been called "Braidism," but simply because I think it best expresses the phenomena we are discussing) is simply a curious subjective influence which has been common to mankind for all time, but has been known under other names, and has been attributed to wrong causes. It has been employed to deceive the subject himself, and also by him to deceive others ever since man was an intelligent being. It has also (although unconsciously) been employed for many good purposes, not the least of which is the one named on page 576 of *Archives* for 1888. To one who realizes the power of subjective influences this case is no mystery, but a simple record of a daily occurrence. Not only can the repetition of prayer by the hypnotically disposed remove the pain of tooth-drawing, but it can dispel tortures to which this is but as the prick of a pin, and in the same way. In a fit of sudden anger a man has slain his brother; or, under the delirium of passion, a woman has committed her greatest sin; and when the reaction comes the horror of the situation produces an agony which is seemingly more than can be endured. At last, borne down with crushing penitence (a relief in itself to the overwrought nerves), the penitent goes into the church and, kneeling down, fixes the eye upon an image of a saint or the virgin and repeats, over and over again, in the monotonous way people repeat anything with which they are familiar, his "Pater Noster" or her "Ave Maria" until the excited nerves are reduced to quiet. I am not discussing the spiritual effect undoubtedly produced by penitence and prayer; but I contend that the outward calm that comes in such a case is a perfectly natural result akin to hypnotism, produced by the fixed gaze and the consequent abstraction of the mind. In short, natural results are always produced by natural causes.

When we see how overpowering is the subjective influences upon the objective surroundings, we are prepared to understand how pain is reduced and cures are effected by what appears not to be ordinary agencies. To begin with, a great deal of the illness in the world is the result of subjective influences. Then why is it strange to find they are cured in the same way? Thousands of illustrations could be given to show what I mean, but one will suffice. A medical friend once related to me the case of a girl who came one day while he was attending to hospital practice with her leg drawn up so much that she used a crutch, and also complained of much pain. All attempts to straighten it proved unavailing until the doctor put her under chloroform, when the leg was as right as ever. But just as soon as the patient began to be conscious, the leg began again to be drawn up, and was stiff and painful. The doctor looked solemn, and told her it was a very bad and a very curious case, and that she must come again the next day. Nothing loth to be made a heroine, the girl came as directed. In the mean time, the doctor had provided himself with a box; and as soon as the patient was under the chloroform, he straightened out her leg and fastened it into the box, so it could not be removed. When the patient began to recover there was a dreadful scene, and she would have done herself much damage if she had not been held. She declared that the pain was dreadful, which was very likely true. In time she got calmer, and then asked the doctor what he had done; upon which he explained. When she further asked how long he intended keeping her in that condition, he replied that he should do so until she promised to stop shamming and would get up and go to work. She resolutely held out for three days, when she gave up the contest and promised, and was discharged cured. Now, this girl was suffering from the effects of purely subjective influences. The probabilities are that at first she began by pretending to have a pain in her leg, and finding she got much sympathy, and an excuse for idleness, she kept the thing going until she fancied she really did have something the matter with it; and then a condition was easily induced in which it was gradually drawn up, and really gave her great pain when any attempt was made to straighten it. Fortunately for her, she fell into the hands of a man who knew how to cure her by the application of a little common sense which broke the spell into which she had voluntarily cast herself. But, let me ask, what would have been the result if this woman had, by some strange accident, dropped into one of those meetings where it is pretended that miraculous faith cures were effected? We know that in all these cases there is an immense amount of emotional excitement, sometimes displayed and sometimes suppressed. Indeed, it is all emotion with no pretense at the exercise of the judgment; and the more of this emotional faith that can be got up, the more certain is the prospect of results. As this girl had made herself a cripple by the combined action of her fancies and her will, she was a fit subject to be made well again by the same agencies. All that would have been required of her, if she had gone to some place as I have indicated, would have been to work herself up to the proper pitch of excitement until her mind had become diverted from her crutch and her stiff leg; and then, before she was aware of what she was doing, she would have put her foot to the floor,—a cured woman.* At such a proof of their powers, the believers in the miraculous would have made the world ring with this indisputable evidence; yet there would not have been the least trace of the miraculous in it. But, on the other hand, it must not be supposed that we have settled the matter when we have determined so much; for, however it had been done, *there would have been the cure*, and that fact would have to be accounted for. Therefore, instead of fighting over the fact of the cure, as do most of those who deny the miraculous influence, the real question is,—how could the cure have been effected? The answer to all such questions will be found, so I think, in a study of the subjective influences. The clinical influence of this potent power is so constantly manifested that one is sometimes almost led to the belief that it is the chief agent in the curative process. More people employ a medical man because they "have faith in him," than because of his learning and skill. It is not very far from the truth that as a man thinketh so is he; and that the objective surroundings are very much the ultimation of the ideal conceptions. The Mississippi valley was, a hundred years ago, a wilderness. But what is it to-day, and what has wrought this wonderful change? Certainly nothing of an objective character, for all these remain very much as before. There are the same rivers, lakes, mountains and skies. New Mexico is asking to be admitted into the Union as a State, and is refused as not being yet fit for the position. Yet, New Mexico was settled by white men long before Virginia and Massachusetts. Why is it that such a country, with all its advantages is in its present condition after three centuries of settlement, while a bleak and barren New England is teeming with population and wealth? There must be some subjective difference between the Indian, the Spaniard and the English, which is not difficult to find. In art the subjective influences are always apparent, and a man's *style* is the revelation of himself. No Frenchman or German can faithfully paint the portrait of an Englishman, and much less can an Englishman paint anybody but one of his own country. I was in Paris a few weeks since, and passed the new statue of Shakespeare, recently erected. One could see for whom it was intended, but it was not the real Shakespeare. The French artist did not have it in him to produce the image of one so intensely English; but give him one of his own countrymen to portray, and he would make a likeness. Catlin's portraits of Indians are only ugly white men dressed in Indian costume; and Power's Greek slave is a free-born Yankee girl, in spite of his theme and his model. This paper might be extended indefinitely, but I hope I have said enough to show that certain phenomena which have so long misled and puzzled the world, can be explained in a manner to show that they are governed by the same individual laws that control everything else.—*Archives of Dentistry.*

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* DEAR DOCTOR:—I saw the following in the "*Anglo-American Times*," only two days after posting you the article on cures by faith and anæsthesia by prayer. You will see that it is exactly on all fours with my supposition in the case of the girl, provided she had gone into a place where they cured "by faith:" "A faith cure that was witnessed by upwards of 200 persons, is told of in a despatch from Leesburg, Florida. S. B. Thompson, of Lady Lake, was for seventeen years a helpless cripple from a spinal trouble which doctors pronounced incurable. About ten days ago he was directed in a dream to pray in church for his cure and to get the congregation to do likewise. While carrying out the advice he thrice heard a voice saying: 'Arise and walk.' The third time the voice was quite distinct and positive, and he obeyed at once. Rising to his feet, he cried out, 'It is done,' and walked firmly and steadily out of the church, down the street and into his own house, shouting and praising God. He is now perfectly cured and walks easily. All Lady Lake, Leesburg and the intermediate country are agog over this apparent miracle, which is well and strongly attested."—P. S.

ARTICLE IV.

WHAT DO YOU KNOW ABOUT AMALGAM.

Dr. A. H. Fuller then read an interesting paper on "What do we Know about Amalgam," the discussion of which was opened by Dr. Patterson, who said that this subject was apt to cause much discussion. He did not agree with all the conclusions of the writer. In regard to the injurious effects. He does not believe there can be any injurious effect after the filling is hardened and oxides are formed. As he inserts an amalgam filling, there is no change, no shrinkage, no expansion. All cavities that are to be filled with amalgam should be made simple cavities, with three or four walls, using matrix if necessary. He uses a mallet, or other force, with a pad of cotton or spunk under point of instrument, and inserts it as rapidly as possible to make a solid filling. If the cavity is properly prepared, there is no thin edge to break off.

In regard to amalgams in general, he objects to the color in the mouth in any position, and only uses it on account of the pecuniary consideration. Some dentists assert that they will not use it, or anything but the very best material—that is gold; but in the country, and where it is necessary to earn a living, it is necessary to use this material, though he constantly uses the cement more and amalgam less for this class of work.

He has had no particular experience with copper amalgam, but obiects to it more than the others on account of the color. Can not see how copper amalgam could have any poisonous effect, as it oxidizes, and the oxide is inert since there can not be sufficient acetic acid in the mouth to act on the same.

Dr. Stevens is obliged to use amalgam often in his practice. In building up a tooth with this material, he sometimes makes a band of gold, which is fitted perfectly to the root and then filled with amalgam.

Dr. Patterson asks that statements, in regard to cases where amalgam is supposed to be injurious, be substantiated, as we have no positive proof that the trouble ascribed by many to the mercury in fillings, is due to it.

Dr. Pierce is thankful to Dr. Fuller for his paper, as it permits him to bring out one or two points on the subject of which he has made a study. He doubts that there is any injurious effect from amalgam fillings after hardening, as he has made the test repeatedly with gold foil and found no traces of the fumes of mercury. Before the filling is hardened, there are fumes that affect gold foil, but when once crystalized, it will not affect it. As to the poisonous effects of the copper, if mercury and copper form no chemical compound, and if the copper is only held by suspension, there will be copper salts formed by the acidulated moisture in the mouth, and these salts are poisonous. Put a copper plate in acidulated water and it will be oxidized, but the copper salts continue to be deposited. But, if mercury and copper do make a chemical compound then it is possible this compound may be of a different character from either mercury or copper. He has experimented with all amalgams and finds copper salts in every amalgam containing copper. He disagrees with Dr. Fuller when he says that the dryer the amalgam the more shrinkage there will be, as he has found that the dryer the amalgam, as long as it can be handled, the better. As to the toxical effects of copper salts, he is an advocate of the idea that the finer you divide, the more effect there is, as he proves in the use of mercury, of which a teaspoonful may be taken without producing any effect, but if there is sufficient warmth of body to produce vapor from it, there will be a poisonous effect.

Dr. Conrad has never seen a single case where there were any bad constitutional effects from amalgam fillings. If there is a liberation of free copper for formation of copper salts in the mouth, there would, in time, be an appreciable loss of substance, which is not found to be the fact. The use of amalgam is dangerous, because the copper amalgam makes such a perfect filling that we are liable to put in too many; that old copper amalgams look like gold. Copper amalgam will not discolor tooth substance, makes a perfect edge, and that, in the case of children with soft teeth, makes the best filling.

Dr. Patterson said that it has not been shown yet that there are poisonous effects from copper amalgam *in the mouth*, but only that there are such effects out of the mouth, which no one denies. Nitric acid will destroy a tooth out of the mouth, but, though nitric acid exists in the mouth, we know it does not destroy the tooth in the mouth. Nitro-muriatic acid will dissolve gold, but, though it exists in the mouth, we know it does not dissolve the gold filling in the mouth; and it is not proved yet that there is any poisonous effect from the copper salts in the mouth.

Dr. Pierce said it is difficult to prove any fact or effect in the mouth, and it is impossible to get positive evidence in the mind of a doubting Thomas. If you touch an amalgam filling in the mouth with acetic acid, it causes an immediate flow of saliva from Wharton's duct; and that while this might be something else, he believes it to be the irritation caused by the poison salts.

Dr. Patterson said the action of acetic acid on the gustatory nerves alone, would cause the flow of saliva.

Dr. Conrad said that as to amalgam fillings which were as green as grass, he had seen a tooth filled with gold which was almost as green as yellow grass, but did not know what caused it.

Dr. Harper said that in regard to discoloration of copper amalgam he had found that in some mouths it does not discolor at all; in others, slightly, and in others was very dark. In regard to green color, he had transplated a tooth, filled the root with gutta-percha, and the tooth turned green.

Dr. McMillen told of a tooth crowned which turned green.

Dr. Morrison recommended the use of the French bibulous paper to use in packing amalgam.

Dr. Fuller said that Tomes gives careful evidence that he has not seen evil effects from amalgam fillings—and many others also—but there are many who have given evidence to the contrary, and we should accept this in preference to the other. Because one man has not seen a thing, does not prove that it does not exist. Some constitutions are possessed of certain idiosyncrasies, and certain articles that are harmless to the majority of people, act as poison to them, as, for instance, strawberries, and again, honey, and others; and some people have this idosyncrasy that their system will not admit of the presence of even the smallest amount of mercury. He then gave two cases where there was every evidence of poisoning from the mercury in an amalgam filling; one where it was used for setting a crown, and the other as a filling in the mouth of a boy, and concluded that, "there being evidence in favor of it, the evidence to the contrary should not be accepted in preference."

Dr. Patterson said that Dr. Fuller has just given the first authentic case of injury, due to mercury in amalgam, that he has ever heard; but even this being the case, to what point does the discussion tend? Are we to do without amalgam because there are a few cases of injury from its use? Every physician will tell you that he meets with idosyncrasies in people, some who can not endure morphine or quinine, etc., but they do not, on that account, discontinue the use of these valuable remedies.

Dr. Fuller wished to correct any such impression, and moved the subject be passed.—*Archives of Dentistry.*

ARTICLE V.

CHEMISTRY, PHYSIOLOGY AND PATHOLOGY OF NITROUS OXIDE—PRACTICAL POINTS.

GASEOUS INTERCHANGE.

And, first, as to the effects produced by the inhalation upon the gases contained in the lungs and blood, and for which I have used the term "gaseous interchange."

1. That the expired gas tends to become precisely similar in composition to that inspired, so that, *prima facie*, one would be justified in concluding that no very active decomposition of the gas occurs; and this conclusion is further justified by the researches of Hermann and other observers.

2. That the carbonic acid, instead of being increased in quantity, as is the case in ærial expirations, is rapidly and continuously diminished.

3. That the amount of oxygen is diminished and, in fact, almost entirely disappears. in the blood

4. That, as might be expected from the fact, the nitrogen does not take any very active part in the physiological functions, even under ordinary circumstances, in gaseous inhalation, it is removed by diffusion alone, and hence very slowly.

5. That the substitution of nitrous oxide for the other gases does not take place at all equally or proportionately, but mainly at the expense of the oxygen, which is rapidly reduced.

Dr. Amory's experiments upon himself and upon dogs, have very much the same result, but were carried somewhat further. He found that the relative amount of carbonic acid inhaled during fifty respirations of the gas, was only about half of that found in the same number of ærial respirations.

CONCLUSIONS.

1. That the progressive loss of carbonic acid in the expired gas is not associated with any accumulation in the blood, and must, therefore, be due either to lessened production in the tissues or to defective absorption by the blood.

2. Now, in order that carbonic acid may be produced, free oxygen, or an agent capable of yielding free oxygen, must be present. But we see that the free oxygen is displaced by nitrous oxide, and we know that the latter undergoes no decomposition in the blood.

3. Hence, during Inhalation, the process of tissue metabolism and the production of free carbonic acid is in abeyance.

PULSE TRACINGS.

A comparison of the pulse trace taken from an average healthy individual during the height of anæsthesia, with one taken from the same individual immediately prior to inhalation, shows:

1. An actual increase in the number of heart beats.

2. The greater height of the stroke.

3. The greater sharpness of the initial curve and apices.

4. The almost complete absence of the tidal wave.

5. The accentuation of the dicrotic wave, which is at the same time removed further from the apex of the trace.

I think we may gather from the consideration of these tracings alone, (1) that the heart's action is accelerated and slightly increased in force; (2) that the blood-pressure is lowered; and this latter point has been proved by actual experiments.

CAUSES OF DEATH.

1. That when death has occurred it has been due either to syncope or asphyxia.

2. Simple faintness may occur either before the inhalation is complete, apparently from fright, or during the

stage of recovery, apparently from the shock of the operation.

3. Fatal syncope has, with very few exceptions, been distinctly traceable to the shock, consequent upon commencing or continuing the operation when the anæsthesia was incomplete, and have, as may readily be imagined, occurred in patients more or less out of health.

4. Hence the importance of never permitting any operation in a semi-anæsthetical condition.

5. The occurrence of asphyxia from laryngeal spasm, or from falling together of the epiglottidean folds, as in chloroform, has not been recorded with regard to nitrous oxide, and does not seem likely to give rise to any trouble. Such a condition, if it does occur, is, of course, to be looked for during the height of anæsthesia.

6. Fatal asphyxia has invariably been the result of some mechanical cause, *e. g.*, regurgitation of vomited matter, slipping of tooth or gag into the larynx, and has therefore usually occurred during or immediately after the completion of the operation.

7. Hence the importance of watching the mouth, as well as the face, during the stage of recovery.

SYNCOPE.

Recognized by—Sudden dilatation of pupil, extreme pallor, heart failure, muscular relaxation, feebleness of breathing.

Treatment.—Prone position, draw out the tongue; artificial respiration.

ASPHYXIA.

Recognized by—Increasing duskiness, violent efforts at respiration, gradual failure of pulse.

Treatment.—Remove foreign bodies (inversion), or draw the tongue *well* forward, press on the chest, wipe out mucous; laryngotomy followed by artificial respiration.—SILK, *Dental Record.*

ARTICLE VI.

DISEASES OF THE MAXILLARY SINUS OR ANTRUM.

DR. LOUIS JORDAN, DELPHI, IND.

It was not till the knowledge of anatomy had made considerable progress that the existence of this cavity was known. The credit of a correct description belongs to Nathaniel Highmore; hence its name, "Antrum Highmorianum."

This cavity is subject to some of the most formidable and dangerous diseases the medical or surgical practitioner is called on to treat. Diseases are sometimes here met which only ends in death. An old gentleman, a farmer, in the seventies, had been afflicted for many years with fic-dolerean, and, getting no relief through medical aid, came to consult me. I told him I would try a remedy, but was doubtful of its doing him any good. It was a preparation of salammoniac. It had but little effect, and he lingered for two or three years more, afflicted with most excruciating pain, till death relieved him.

It is not all the diseases of the antrum that are of so dangerous a character; some are simple and easily cured. Those that are recorded as the least dangerous, and would yield most readily to treatment in the earlier stages of the disease, often, if neglected or improperly treated, assume a new and aggravated form, and bid defiance to the skill of the physician and surgeon.

The form which the disease puts on is determined by the state of the constitution or the sequence of some disease badly treated. The cause, which in one person would give rise to a simple inflammation of the lining membrane, or mucous engorgement of the sinus, would in another produce an ill-conditioned ulcer, fungous hematodes or osteo-sarcoma. In many cases of disease of the maxillary sinus, the danger to be apprehended results more from neglect than any necessarily fatal character of the malady.

In forming a prognosis, the circumstances to be considered are the state of the health, the progress of the affection, and the nature of the injury inflicted by it on the surrounding tissues. In young or middle-aged persons of good constitutions, a morbid action may exist in the antrum for years without exhibiting the least alarming symptom. Where the constitution is less healthy, it may rapidly change into a form of disease so malignant as to endanger the life of the patient. The qualities of the secretions are changed, and a nauseating, fetid odor is thrown out. In many instances it is almost insufferable, and when prevented from escaping through the natural channel into the nose, they discharge through one formed by art, or break through the cheek, alveolar border or palatine arch. It may exist for weeks or months before its presence is suspected.

Man is not the only animal affected with disease of the antrum Dr. William Cook says a disease prevailed among cattle which caused them to go mad, and it was believed they were bitten by a mad dog. Having a desire to ascertain the seat and nature of the malady, he examined the head of one that died of it. He first directed his research to the brain, but no abnormal appearance were observable; he then laid open the superior maxillary cavity and found it filled with fœtid matter.

The extremity of the root of a tooth may perforate the sinus, causing inflammation of the lining membrane, and when matter is thus formed in the alveolus of the superior molars, instead of forcing its way through the socket of the tooth, it will escape into that cavity, mixing with its secretions, and pass out through the nasal opening.

Inflammation and ulceration of the pituitary membrane of the nose may extend to the maxillary sinus, but it is seldom that both are affected at the same time.

Diseases of the nasal fosse, as catarrhal affections, may occasionally give rise to the morbid condition of the maxillary sinus. Concealed as it is, with the essential part of the superior maxilla, and being connected with the nose by a very small opening, it would seem beyond the reach of most causes to which diseases of the nasal fosse are attributed.

The opening of this cavity may sometimes be closed by a disease in the nose; and, if so, it is followed by a mucus engorgement of the sinus, inflammation of its lining membrane, and dissention of its osseous walls, and sometimes by a more complicated disease, as polypus.

The pain occasioned by a diseased tooth is often severe, and the inflammation excited by them in the alveoli dental periostea and gums frequently extends to the whole of one side of the face. Some writers attribute these affections to the morbid condition of the teeth and alveoli, other diseases, blows on the face, and exposure to cold. The pituitary membrane of the antrum is shielded from the irritating agents to which it is exposed in the nasal fosse and other cavities. It would seldom be affected with inflammation were it not that it is frequently acted on by morbid-excitants, the influence of which seldom extends beyond the alveolar border and face. Febrile and gastric affections, eruptic diseases, as measles, and small-pox, syphilis, excessive use of mercurial medicines, scorbutic or scrofulous diathesis of the general system, and anything that will enervate the vital powers of the body, increases its irritability.

Boyer describes the symptoms as a very severe fixt and deep-seated pain under the cheek, extending from the alveolar border to the lower part of the orbit, local heat, pulsation and sometimes fever. Deschamps distinguishes the symptoms from other affections of the cavity by a dull, heavy pain in the region of it, which, he says, becomes sharp, and extends from the alveolar to the frontal sinus. He tells us this malady cannot be confounded with any other, if there is no external visible cause. Suppuration and ulceration have peculiar signs which cannot be confounded with those of inflammation.

IN PRACTICE.

In the latter part of the summer of 1862, A. Anderson, a potter by trade, residing in our town (Delphi), was attacked by a severe pain in the antrum, extending, as Boyer describes it, from the alveolar border to the orbit. He applied to his physician, Dr. Thomas, who thought that the extraction of the first superior left molar would relieve him; but, in attempting it, failed. He then sent the patient to me, but I failed. The pain grew so severe as to almost distract him. I advised him to go to Lafayette and consult Dr. Moore, and, at his request, accompanied him. Dr. Moore tried to extract it, but failed. He then extracted the wisdom tooth, thinking it would relieve him. It was with difficulty he extracted it, and no relief was given. He then perforated the antrum with a drill; but no pus followed. The pain ceased and we returned home. I kept a pledget of cotton dipt in creosote in the orifice for several weeks, renewing it daily. In the meantime I had occasion to go east, and, in my absence, he neglected it. When I returned I found the orifice closed, and the pain as severe as at first. I perforated it again, and applied the cotton pellets with creosote, and, continuing it for six or eight weeks, succeeded in effecting a cure. He had no decayed teeth in either jaw.

In the spring of 1871 Dr. John Richardssn (now dead), of Delphi, had a scrofulous case that baffled him. A young man of eighteen years was attacked with a severe pain in the frontal sinus. The doctor brought him to my office to have me examine his teeth. I found them but little decayed. After a consultation we agreed, the pain being on the right side, to perforate the sinus near the front and lateral incisors in two places, which I did applying carbolic acid on a pellet of cotton in the orifices, renewed it every day. This I continued for about two months, the doctor at the same time treating him.

The pain ceased, but the doctor continued his treatment till his patient fully recovered. He is at this time in good health, and while his teeth are not in the best condition, the roots are filled, and he has not experienced pain in the sinus since I treated it.

A minister of the gospel in Delphi having the superior left lateral incisor decayed wished to have it filled. The nerve being dead, I proceeded to treat preparatory to filling the fang and tooth. By the time I was ready to fill it, he accidently broke it off. I then filled the extremity of the fang, leaving it for some time before inserting a tooth, to see if it was properly filled. I then inserted a Bonwill tooth. After wearing it some time he broke it. I put on another, and after wearing it for some time an abscess formed near the front tooth. I attempted to heal it and failed. I then advised him to have it extracted, but he refused. I continued treating it, but had no success in getting it healed. I at length succeeded in extracting it, but found no inflammation in the periosteum. I treated with carbolic acid for some time, and it seemed to grow worse instead of better. A physician who knew of the case, looked at the abscess, and, probing it, found the process around the front incisor exfoliated. I then commenced cutting the exfoliation away, syringing once a day with listerine. Some ten or more years ago he had the lachrymal ducts operated on, since which matter would form in the corner of the eye, and the tears would flow over instead of through the duct. The abscess appeared to follow to the apex of the tooth directly toward the duct. The disease has been there for a great while, and is not altogether healed at this date.—*Ohio State Journal.*

CHICAGO DENTAL SOCIETY.—At the regular meeting of this Society, held Tuesday evening, March 5th, 1889, the following resolution was adopted:

Resolved, That it is the sentiment of this Society that it would be of interest to the members of the dental profession to become members of the Dental Protective Association of the United States.

LOUIS OTTOFY,
Corresponding Secretary.

Editorial, Etc.

The Seventh Annual Commencement of the University of Maryland Dental Department.—The commencement exercises of the University of Maryland Dental Department took place at the Lyceum Theatre, Baltimore, on Wednesday evening, March 13th, 1889. The auditorium of this beautiful building was filled with ladies and gentlemen to witness the exercises, and the flowers presented to the graduates by their friends were handsomely arranged in many designs and very numerous.

The beautiful stage, designed by Dr. A. J. Volck, a prominent member of the dental profession of Baltimore, who was present on this occasion, was filled with the Faculty, Graduates and invited guests; among the latter being prominent citizens and professional gentlemen from New York, Pennsylvania, Virginia, South Carolina, West Virginia and Maryland. The exercises began with prayer by the Rev. Charles C. Cooke. The mandamus with the names of the graduates was read by the Dean, Prof. Ferdinand J. S. Gorgas, M. D., D. D. S. The degree of "Doctor of Dental Surgery" was then conferred upon the following members of the graduating class, by authority from the Board of Regents, Hon Severn Teackle Wallis, L. L. D., Provost.

Charles G. Aven,	Virginia
Augustine Pennington Badger,	Maryland
Eugene James Bailey,	South Carolina
Victor Durand Barbot,	South Carolina
Joseph Percy Blair,	Virginia
Frank Beck	Pennsylvania
Kelly Ragland Bragg,	Missouri
H. Wood Campbell,	Virginia
Thomas S. D. Covington,	Virginia
August Adolph Theodor Wilhelm Cuny,	Germany

E. Douglas Davis,	W.Virginia
Henry Davis, M. D.,	Missouri
Edwin R. Dodson, M. D.,	Maryland
Pearl Louis Ellis;	Vermont
William Lafayette Fish,	New Jersey
Henry Augustus Free,	Pennsylvania
David Goebricher,	Maryland
Joseph A. Haas,	New York
E. Patterson Hayes,	Pennsylvania
Reuben Benjamin Hills,	Massachusetts
William Henry Holland,	South Carolina
John Whiteford McKinnon,	Pennsylvania
William Lee Miller,	W. Virginia
J. England Molony,	South Carolina
Solomon L. Nigolosian,	Asia Minor
Frank Merriman Oldham,	South Carolina
Czeslaus Opielinski,	Germany
Geo. B. Patterson,	North Carolina
Frank Zea Pirkey,	California
Benson S. Roberts,	Bermuda
Fritz Franz Wilhelm Schloendorn,	Germany
Joseph B. Sharp,	New Jersey
Archie Carver Shoemaker,	Pennsylvania
Benjamin Simons,	South Carolina
Hampton K. Smith,	South Carolina
Cornelius van der Hoeven, M. D.,	Holland
William J. Warnock,	South Carolina
Murray V. Wright, M. D.,	New Hampshire

After the conferring of the degrees, the awards of the prizes were announced by the Dean, and the prizes, fourteen in number, were presented by Prof. J. Edwin Michael, M. D., the dean of the University School of Medicine, and professor of anatomy in the Dental Department, as follows:

University Gold Medal, to Victor D. Barbot, of South Carolina, for the highest number of votes at the final examination; honorable mention, Hampton K. Smith, of South Carolina.

S. S. White prize of dental engine, to E. Patterson Hayes, of Pennsylvania, for the best two fillings of cohesive and non-cohesive gold; honorable mention, David Goebricher, of Maryland.

Francis Arnold prize of set of forceps, to Fritz F. W. Schloendorn, of Germany, for best full set of gum teeth on metal.

Snowden & Cowman prize of set of Chapin A. Harris' forceps, to Cornelius van der Hoeven, M. D., of Holland, for best full set of continuous gum work; honorable mention, Joseph A. Haas, of New York.

Dr. James H. Harris gold medal, to Victor D. Barbot, of South Carolina, for the best filling of non-cohesive gold.

Dr. F. J. S. Gorgas gold medal, to William Lee Miller, of West Virginia for the best filling of cohesive gold; honorable mention, E. Douglas Davis, of West Virginia.

Dr. Jno. C. Uhler gold medal, to August A. T. W. Cuny, of Germany, for the best partial set on metal.

Dr. Charles L. Steel gold medal, to August A. T. W. Cuny, of Germany, for the best bridge and crown work.

Dr. I. H. Davis gold medal, to David Goebricher, of Maryland for the best combination set of vulcanite and metal.

S. S. White prize set of instruments, to August A. T. W. Cuny, of Germany, for best vulcanite set.

Dental Department gold medal, to Fritz F. W. Schloendorn, of Germany, for the best set on celluloid base.

Dr. Frank L. Wood gold medal, to George B. Patterson, of North Carolina, for the best specimen tooth gold filling; honorable mention, Fritz F. W. Schloendorn, of Germany.

Class gold medal, to August A. T. W. Cuny, of Germany, for the best specimen set of teeth; honorable mention, Fritz F. W. Schloendorn, of Germany.

Dr. D. Genese prize, to Fritz F. W. Schloendorn, of Germany, for an artistic plaster model of the cranium and jaws and bridge-work connection.

The address to the graduates was delivered by Dr. J. B. Patrick, of Charleston, S. C., one of the most prominent dental practitioners in the South, whose manner of delivery was that of a practiced orator, and his address a most acceptable and interesting comparison of the dentistry of the past with that of the present, and an earnest appeal to the graduates to practice their profession in a manner worthy of the old and renowned institution, by whose authority they enter upon the practice of dental science. The class oration was delivered by Dr. Hampton K. Smith, of S. C., a member of the graduating class, and its delivery was such as to prove to his audience that his classmates had been very fortunate in the selection of their orator.

The number of matriculates of the session 1888-89, was one hundred and twenty.

Following the commencement exercises, the annual meeting of the Alumni Association was held, at which Dr. E. P. Beadles, of Danville, Va., was elected President, and Dr. Chas. F. Dinger, of Baltimore, Secretary. The annual banquet of the Alumni Association was held at the Howard House, the toasts being responded to by Profs. Gorgas, Michael, Atkinson, Coale, Uhler and Harlan, of the Dental Department Faculty, and Dr. Beadles, President of the Alumni Association, Dr. H. K. Smith, of the graduating class, Dr. Richard Grady, of the Maryland State Board of Dental Examiners, and by Drs. D. Genese, W. A. Montell and others. The menu was elaborate, and well served, and the occasion will long be remembered by all who participated.

ANNUAL COMMENCEMENT OF THE BALTIMORE COLLEGE OF DENTAL SURGERY.—The forty-ninth annual commencement of the Baltimore College of Dental Surgery took place at the Lyceum Theatre, on Friday evening, March 15th, 1889, before a large audience. The exercises opened with an overture by Prof. Adam Itzel's orchestra, followed by prayer by the Rev. Wm. M. Dane. Prof. R. B. Winder, the dean, announced the names of the graduates and also conferred the degrees and prizes. The oration was delivered by J. N. McCormick and the valedictory by C. L. Morey.

The graduates were:

G. E. Adams,	New Jersey
L. P. Brown,	New York
P. C. Carmichael,	New York
George B. Dorsey,	Mississippi

F. C. Exley.	Georgia
W. E. Hannah,	Pennsylvania
L. F. Hough,	Virginia
W. D. James,	Minnesota
A. L. Jones,	Virginia
N. B. Larkin,	Tennessee
J. E. Armitage,	New York
E. E. Butler,	Virginia
G. R. Carter.	Virginia
G. E. Coughlin,	Maryland
A. R. Eaton,	New Jersey
N. L. Hale,	Alabama
J. Hardy,	Virginia
H. L. Harlan,	Kentucky
G. W. S. Ireland,	Maryland
B. B. Johnston,	District of Columbia
W. C. Klatte,	South Carolina
A. Kraus,	Roumania
W. H. Lockwood,	Wisconsin
J. H. Minard,	Ontario
C. L. Morey,	Texas
F. H. Moore,	Maine
E. E. Murray,	North Carolina
J. F. McArthur;	Dakota
T. S. McElfish,	Maryland
O. M. Nisley,	Maryland
E. G. Powers,	Minnesota
J. P. Nesbitt,	Ohio
J. N. Penberthy,	Minnesota
J. G. Robinson, Jr.	Maryland
F. Rothenbach,	Germany
G. B. Rush,	Virginia
H. L. Sumption,	Virginia
J. R. Watson,	Pennsylvania
J. P. Whedbee,	Virginia
W. E. Walker,	Mississippi
W. R. Spencer,	Virginia
D. Williams,	North Carolina
C. Whitney,	District of Columbia

The highest prize, a gold medal presented by the faculty, was given to J. P. Whedbee, of Virginia; honorable mention was made of W. H. Lockwood, Wisconsin, and F. Rothenbach, of Germany.

The first prize for mechanical dentistry, a set of forceps, from Snowden & Cowman, was awarded to George E. Coughlin, of Maryland, who also received as a first prize a dental engine, from the S. S. White Company, for operative dentistry. Honorable mention was made in operative dentistry of J. N. Penberthy, of Minnesota; W. E. Walker, of Mississippi; W. R. Spencer, of Virginia; Joseph Hardy, of Virginia, and F. C. Exley, of Georgia. The first prize for bridge-work, a set of Varney pluggers, from the S. S. White Company, was given to Wm. R. Spencer, of Virginia.

The alumni met in the afternoon at the college and elected the following officers: W. W. Walker, of New York, president; A. R. Eaton, vice-president· R. Baley Winder, Jr., secretary, and T. S. Waters, treasurer. The board of visitors are Drs. Fred. A. Levy, of New Jersey, R. Finley Hunt, of Washington, and W. W. Walker.

OXYCYANIDE OF MERCURY, compared with the corrosive chloride.

I. Its solution has a slightly alkaline reaction, and precipitates albumen only slightly.

II. It is less irritant than solutions of sublimate.

III. There is less absorption by tissues than in case of sublimate.

IV. Solution 1-1500 does not attack, except slightly, the materials used in surgical instruments.

V. Vested by its power of keeping soup, the antiseptic power showed itself six times greater than that of bichloride.

VI. Vested by the power to destroy the micrococcus pyogenes aureus, the advantage was slightly in favor of bichloride, 1-1400 to 1-1300.

VII. Employed on suppurating surfaces, or to render a mucous surface antiseptic, it furnishes much better results, because of the tolerance by tissues and feeble absorption.

The cyanide of mercury has about the same properties, but the oxycyanide is more powerful against the micrococcus pyogenes aureus.

UNIVERSITY OF MARYLAND.

DENTAL DEPARTMENT,

N. E. COR. LOMBARD AND GREENE STS., BALTIMORE.

HON. SEVERN TEACKLE WALLIS, LL. D., PROVOST.

FACULTY:

FERDINAND J. S. GORGAS, M. D., D. D. S., Professor of Principles of Dental Science, Dental Surgery and Dental Prosthesis.
JAMES H. HARRIS, M. D., D. D, S., Professor of Operative and Clinical Dentistry.
FRANCIS T. MILES, M. D., Professor of Physiology.
L. McLANE TIFFANY, M. D., Clinical Professor of Oral Surgery.
J. EDWIN MICHAEL, M. D., Professor of Anatomy.
R. DORSEY COALE, PH. D., Professor of Chemistry and Metallurgy.
I. EDMONDSON ATKINSON, M. D., Professor of Materia Medica and Therapeutics.
JOHN C. UHLER, M. D., D. D. S., Demonstrator of Mechanical Dentistry.
CHARLES L. STEEL, M. D., D. D. S., Demonstrator of Operative Dentistry.
HERBERT HARLAN, M. D., Demonstrator of Anatomy.

ISAAC H. DAVIS, M. D., D. D. S.
FERDINAND GROSHANS, D. D. S.
E. PAYSON BEADLES, D. D. S.
PRESTON A. RAMBO, D. D. S.
ELMER J. WISHERD, M. D., D. D. S.
RALPH C. PURNELL, M. D., D. D. S.
NEWTON W. DENTON, D. D. S.
HARRY H. PHILLIPS, D. D. S.

Assistant Demonstrators of Operative and Mechanical Dentistry.

JAMES M. CRAIGHILL, M. D.
HIRAM WOODS, JR., M. D.

Assistant Demonstrators of Anatomy.

Continuous Gum Work will be Demonstrated by DR. J. W. MOFFITT.

CLINICAL INSTRUCTORS:

Dr.	Edward Maynard	D. C
"	W. G. A. Bonwill	Penn
"	A. J. Volck	Md
"	Samuel J. Cockerille	D. C
"	E. S. Chisolm	Ala
"	George H. Winkler	Ga
"	B. M. Wilkerson	Md
"	T. T. Moore	S. C
"	John Murray	Penna
"	W. S. McDowell	Md
"	William Farmer	Va
"	Judson B. Wood	Va
"	George H. Chewning	Va
"	G. F. S. Wright	S. C
"	Walter S. Harban	D. C
"	Robert Y. Henley	Va
"	Ellis B. Bliss	D. C
"	Arthur M. Rice	Conn
"	L. D. Carpenter	Ga
"	L. M. Cowardin	Va
Dr.	James G. Palmer	N. J
"	Samuel A. White	Ga
"	W. W. Allport	Ills
"	J. B. Patrick	S. C
"	W. W. Evans	D. C
"	L. G. Noel	Tenn
"	V. E. Turner	N. C
"	George W. Field	Eng
"	W. C. Wardlaw	Ga
"	A. F. Claywell	Tenn
"	George B. Steel	Va
"	Henry C. Jones	Va
"	W. S. Carruthers	Texas
"	Daniel McFarlan	D. C
"	A. G. Bouton	Ga
"	Thomas H. Davy	Md
"	B. H. Teague	S. C
"	Wm. B. Wise	Va
"	S. Dwight Hodge	Vt
"	C. P. Baird	Tenn

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge**,) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or Winter Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

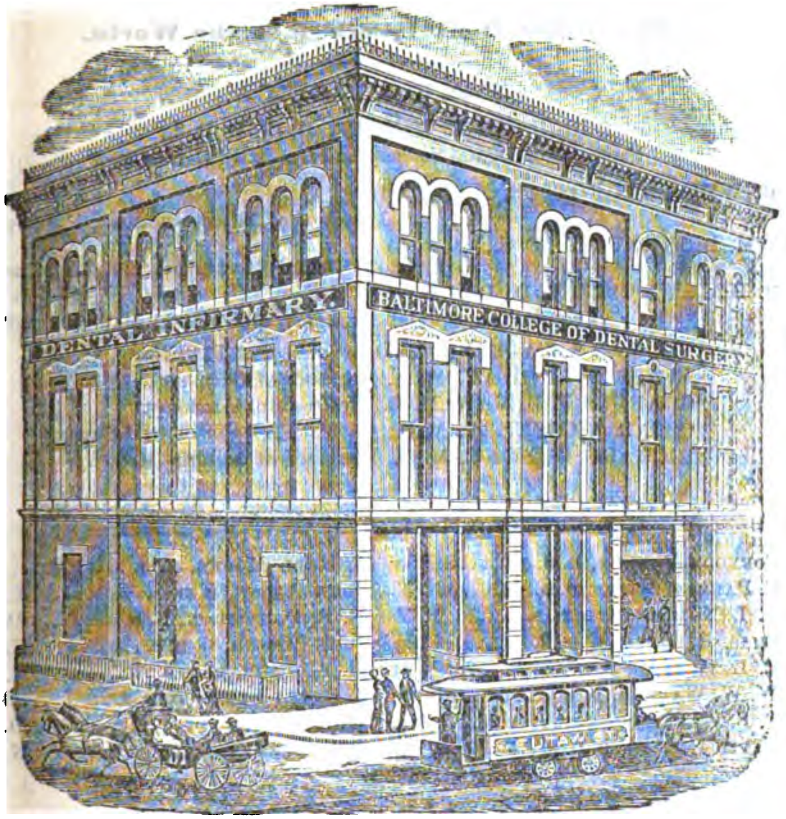
Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

F. J. S. GORGAS, M. D., D. D. S.

Dean of the Dental Department of the University of Maryland.

845 N. Eutaw Street, Baltimore, Md.

Baltimore College of Dental Surgery.


DENTAL INFIRMARY
BALTIMORE COLLEGE OF DENTAL SURGERY

This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations.

The Baltimore College of Dental Surgery,

CHARTERED BY THE LEGISLATURE OF MARYLAND IN 1839.

The Oldest Dental College in the World.

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RICHARD B. WINDER, M. D., D. D. S.,
Professor of Dental Surgery and Operative Dentistry.

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Professor of Therapeutics and Pathology.

WM. B. FINNEY, D. D. S.,
Lecturer on Dental Mechanism and Metallurgy.

B. HOLLY SMITH, M. D., D. D. S.
Lecturer on Special Anatomy and Dental Materia Medica.

THOMAS S. LATIMER, M. D., Professor of Physiology.
JAMES E. LINDSAY, M. D., Professor of Chemistry.
CHARLES F. BEVAN, M. D., Professor of Anatomy.
OSCAR J. COSKERY, M. D., Clinical Professor of Oral Surgery.
RICHARD GUNDRY, M. D., Professor of Materia Medica.

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Assistant Demonstrators.

GEORGE G. HARDY, D. D. S   J. W. SMITH, D. D. S.   J. E. ORRISON, D. D. S.
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J. W. CHAMBERS, M. D., Demonstrator of Anatomy.
J. H. BRANHAM, M. D., Assistant Demonstrator of Anatomy.

The Forty-Ninth Annual Session will commence on the 1st of October, 1888, and continue until March, 1889. The Infirmary is open during the entire year for Dental operations.

Students corresponding with the Dean will please be careful to give full address, and direct their letters to

PROF. R. B. WINDER, DEAN,
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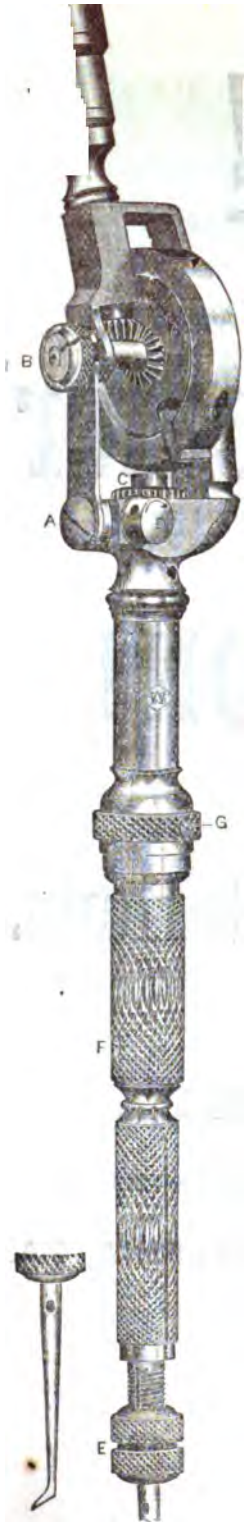


THE BONWILL

—IMPROVED—

MECHANICAL MALLET

FOR SOCKET-POINTS.

Invented by Dr. W. G. A. Bonwill.

In this mallet the blow is delivered by a revolving hammer, a metal wheel with a steel plate let into its rim, and projecting sufficiently to strike the head of the plunger at each revolution of the wheel. The other end of the plunger is hollow, and split in three sections, for the reception of the plugging point. It will hold securely the Snow & Lewis, Cone-Socket, or Engine-bits.

The rapidity of the blows is only limited by the speed at which the engine is run. The force of the blow can be varied by running the engine faster or slower, or by greater or less pressure on the plugging point, or by squeezing the split portion of the case. As sent out, the Mallets are properly adjusted for use, and on no account must the hammer projection be disturbed. All the adjustment necessary is to be accomplished by turning the adjuster. This revolves a worm-gear, which moves very slowly, permitting an adjustment as close as the thousandth part of an inch. No change ought to be necessary except from wear.

The Mallet is held in the hand like a pen or pencil, with the two first fingers resting upon the squeeze-nut, and the thumb against the milled portion of the case. This manner of holding it gives complete control of the working of the Mallet. The blows may be intermitted temporarily without stopping the engine, as in picking up and placing the gold, by simply extending the fingers, thus removing the end of the plunger from contact with the hammer; or the blows may be made almost continuous, by flexing the fingers; or the plugging-point may be turned and directed by a movement of the thumb and fingers.

The milled portion of the case is swiveled at G, to permit change in the position of the plugging-point.

We can supply the Bonwill Mechanical Mallet with attachments for the No. 4, No. 6, No. 7, or H. & W. Handpieces, for the Slip-Joint Connection, and for the Bonwill Engine. The illustration shows the Slip-Joint Connection.

Directions for use with each Mallet.

Price $15 00

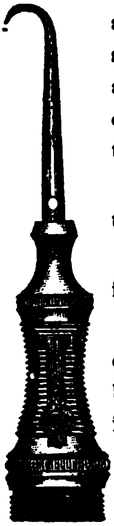
In ordering, be sure to indicate which attachment is wanted.

THE S. S. WHITE DENTAL MFG. CO.

Philadelphia. New York. Boston. Chicago. Brooklyn.

HE ABBOTT AUTOMATIC PLUGGER.

Invented by Dr. Frank Abbott.



The Abbott Automatic Mallet was designed specially to avoid the defects of other appliances of its class. It is simple in construction and combines with the usual direct blow a back-action movement, actuated by the same mechanism, so that with it gold can be packed into cavities in almost any position in the mouth.

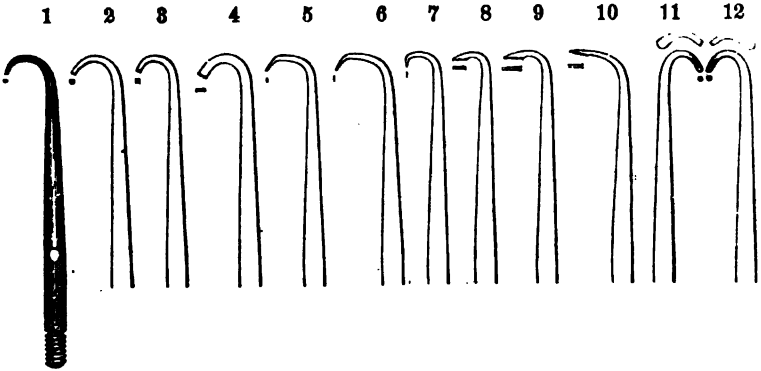
The working parts—pivotal latch, tripping mechanism, hammer, and spring—are entirely free from the case, being carried upon a spindle which passes centrally through it. This plan of construction avoids friction. Each end of the spindle is socketed for the reception of the plugger points, one end giving the direct push or thrust-blow, the other the pull or back-blow.

The Mallet combines simplicity of construction with easy, effective operation.

All the parts liable to wear are made of hardened steel, and the instrument throughout is made in the best manner.

For the direct blow the Cone Socket, or Snow & Lewis points, either of which will fit the socket, may be used. For the back-action blow, Dr. Abbott has devised the set of points shown herewith. It is believed they will cover all requirements.

PRICE, Nickel Plated, ... $9.00



PRICES.

Nos. 1 to 7 inclusive.................................each $0.40
" 8 to 12 " .... " .50
Set of 12 Points.. 5.25

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SOFT AND COHESIVE

GOLD FOIL,

EUREKA GOLD FILLING,

Extra Dry (Gold & Platina) Alloy, Improved Amalgam, &c.

506 BROOME STREET, - - - N. Y. CITY.

We beg leave to call the attention of the Dental profession to the fact that our business was established in 1849, and has been strictly confined to purifying and hammering metals. With this experience we feel justified in asserting that any article we put upon the market should certainly have the merit which we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made *cheap*.

Our Extra Dry Alloy and Improved Amalgam are composed of entirely pure metals, fused and mixed with the greatest care consistent with a view to produce the general effect to be desired in all Amalgams. They contain no *Cadmium* or *Zinc*.

We will cheerfully extend every facility to anyone desiring to test them to their fullest capacity, and most respectfully invite a trial.

These fillings can be obtained at any first-class Dental depot, or directly from our house at the following rates:

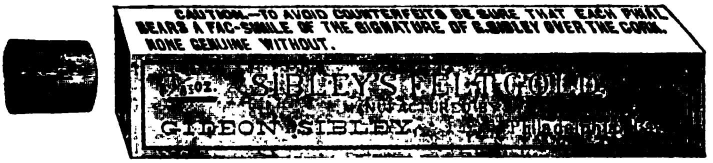
Soft and Cohesive Foil	$30 00	per oz.
" " " "	15 00	" ½ "
" " " "	7 50	" ¼ "
" " " "	4 00	" ⅛ "

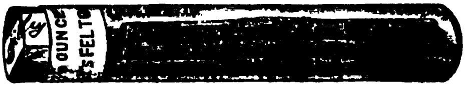
Eureka Gold Filling at same rates

Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

All goods can be returned if not as represented.

FOR SALE BY SNOWDEN & COWMAN


CAUTION.—TO AVOID COUNTERFEITS BE SURE THAT EACH PHIAL BEARS A FAC-SIMILE OF THE SIGNATURE OF G. SIBLEY OVER THE CORK. NONE GENUINE WITHOUT.
SIBLEY'S FELT GOLD
MANUFACTURED BY
GIDEON SIBLEY, Philadelphia



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BY USING

SIBLEY'S FELT GOLD.

After a long series of experiments, I am now able to offer to the profession an entirely new form of Gold for Filling Teeth, which enables the operator to work more rapidly, with greater ease, and produce better results than with any other form of Gold. The Gold is prepared in strips of convenient thickness that may be cut with sharp scissors or a knife into pellets of any desired size. In color it

RESEMBLES FROSTED GOLD.

Is absolutely pure, thoroughly cohesive and homogeneous and readily spreads; conforming to the walls of the cavity.

MAKING A PERFECTLY TIGHT FILLING.

Unless the Gold is exposed to moisture annealing is unnecessary.

Full directions for use accompany each package.

That the profession may have an opportunity to test this Gold, without buying the usual minimum package, for a short time I will put up packages containing 1-40 of an ounce; price, $1.00.

PRICES OF GOLD AS FOLLOWS:

⅛ ounce, $4.50. ½ ounce, $17.50. 1 ounce, $34.00.

CAUTION.—See that a fac-simile of my signature is over the cork of each phial none genuine without.

CASH MUST ACCOMPANY ALL ORDERS FOR GOLD.

Needle Foil Carrier.

PATENT APPLIED FOR.

The cut in the margin represents the full size of this useful instrument.

It consists of a fine needle point, controlled by a spring with sufficient tension to hold it extended while picking up the Gold and carrying it to the Cavity, by pressure the Gold is then forced into position when the spring allows the needle to recede and free itself, leaving the Gold in place. This Carrier was especially designed for Sibley's Felt Gold, but will be found to surpass anything heretofore used for this purpose with any form of gold. Price, $3.00.

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A SPECIALTY.

MEDAL AND DIPLOMA AWARDED BY THE

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All Our Forceps are Warranted.

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ARTIFICIAL TEETH.

Nos. 1010 AND 1012 KING STREET,

WILMINGTON, DELAWARE.

Having been fully recognized as producing a ***Superior Tooth*** at a very moderate ***price,*** now further avail themselves of this medium through which to call the attention of the Dental Profession to their manufacture. They have now brought the character of their ***moulds*** to a legitimate form in design and construction, and the ***shades*** of their teeth to that variety which affords the Dentist the opportunity of approaching the ***natural enamel.*** A very critical examination is solicited as to price and quality. Send for price-list.

For Sale by Dental Dealers Everywhere.

REDUCTION IN FORCEPS.

We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, -	$2.00

ARTICULATORS

From - - - -	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - -	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - -	$1.25
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The S. S. White M'f'g. Co's Pellets, per ounce, - - -	$4.00

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Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages.

Painless Dentistry.

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DR. A. H. LEE. Washington, D. C.—Your Anæsthetic is a wonderful article, and in my hands has proven a success.

DR. J. E. BREEDING, San Diego, Cal.—I use your Anæsthetic daily, and with perfect success.

DR. H. C. MORRISON, Morristown, O.—My patients express themselves much pleased with your Anæsthetic.

DR. A. H. CHANDLER, Sturgeon Bay, Wis.—I find your "Local Anæsthetic" all you claim it to be.

DR. THOS. M. TALBOTT Washington, D. C.—I have tried your Anæsthetic until I am satisfied it will do all you claim for it.

DIRECTIONS.—Dry the gums thoroughly, then apply the "Anaesthetic" to the gums around the tooth with a pledget of cotton; let it remain for one minute, then instantly remove the tooth

A 2-Oz. Bottle of Dr. E. T. Barr's "LOCAL ANÆSTHETIC" sent prepaid for $1.00, and guaranteed to make Teeth Extracting painless, or money refunded, by Dr. E. T BARR, Manufacturer and Proprietor, Bowling Green, Ky.

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Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book.
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" " Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

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We keep on hand a large assortment of Teeth of the following Manufacturers, which we

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S. S. WHITE'S.

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RETAIL PRICE.	15 Cts.	10 Cts.
For $15 00 net Cash,	14 "	9½ "
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H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE,	15 Cts.	10 Cts.
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per. set of 14,	$ 1 00
" 11 " "	10 00
" 29 " "	25 00
" 60 " "	50 00
" 92 " "	75 00
" 125 " "	100 00

Less than 14 Teeth, 8 cents per Tooth.

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GOLD & PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
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Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD
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THE
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Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

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AT ALL DEPOTS.

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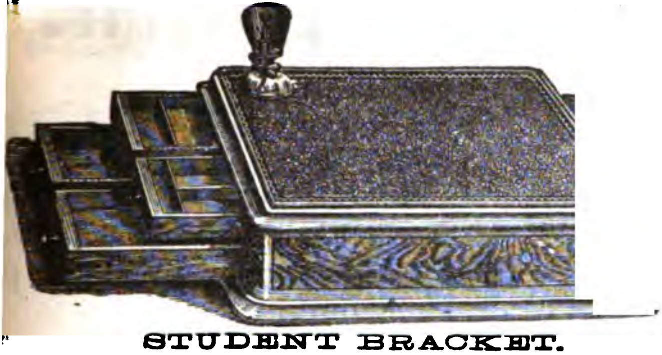
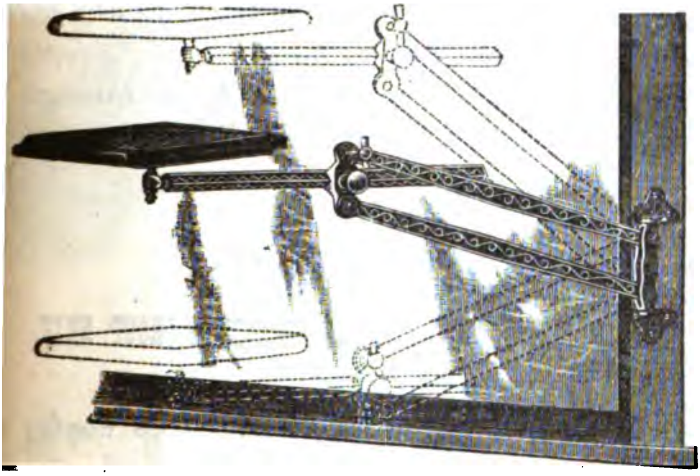
ALLAN TABLE.



STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

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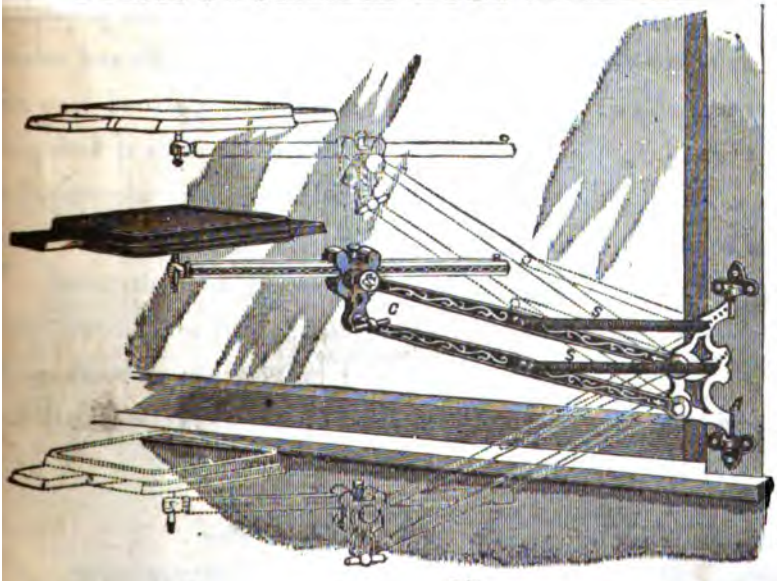
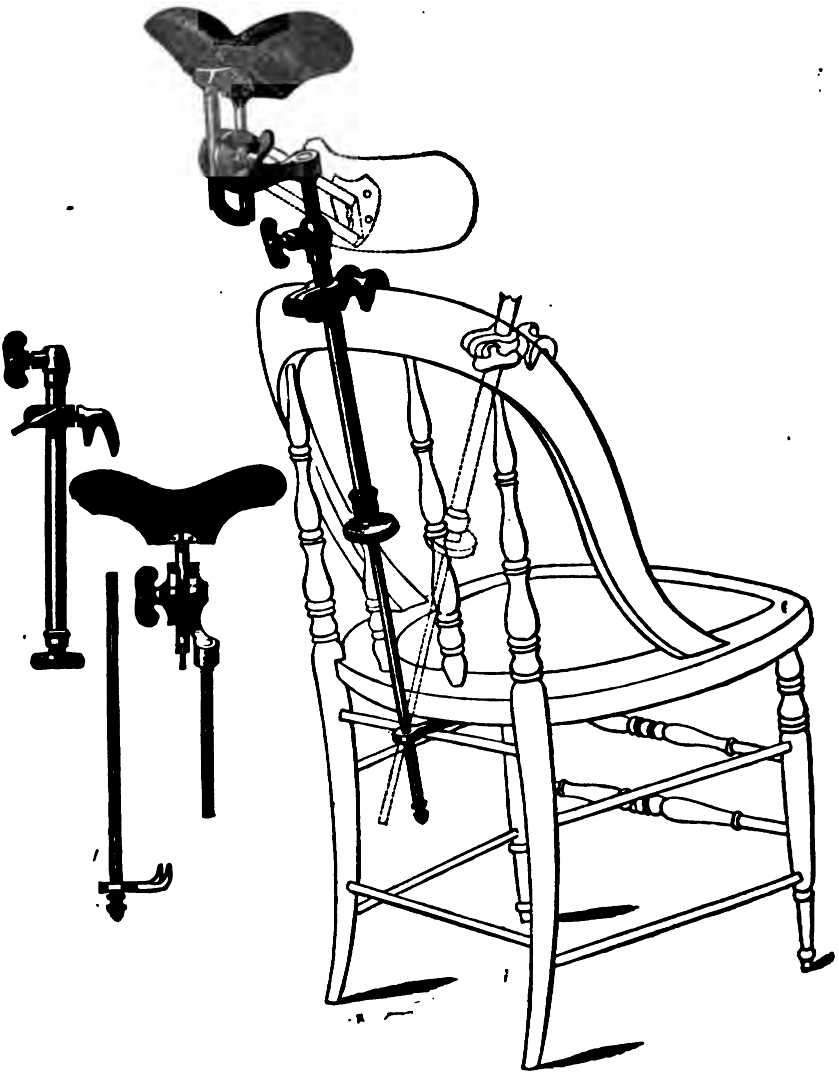


This is the most convenient Bracket made. All metal parts Nickel lated. Bar Slides between four rollers. C, the Clamp, can be reg-

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

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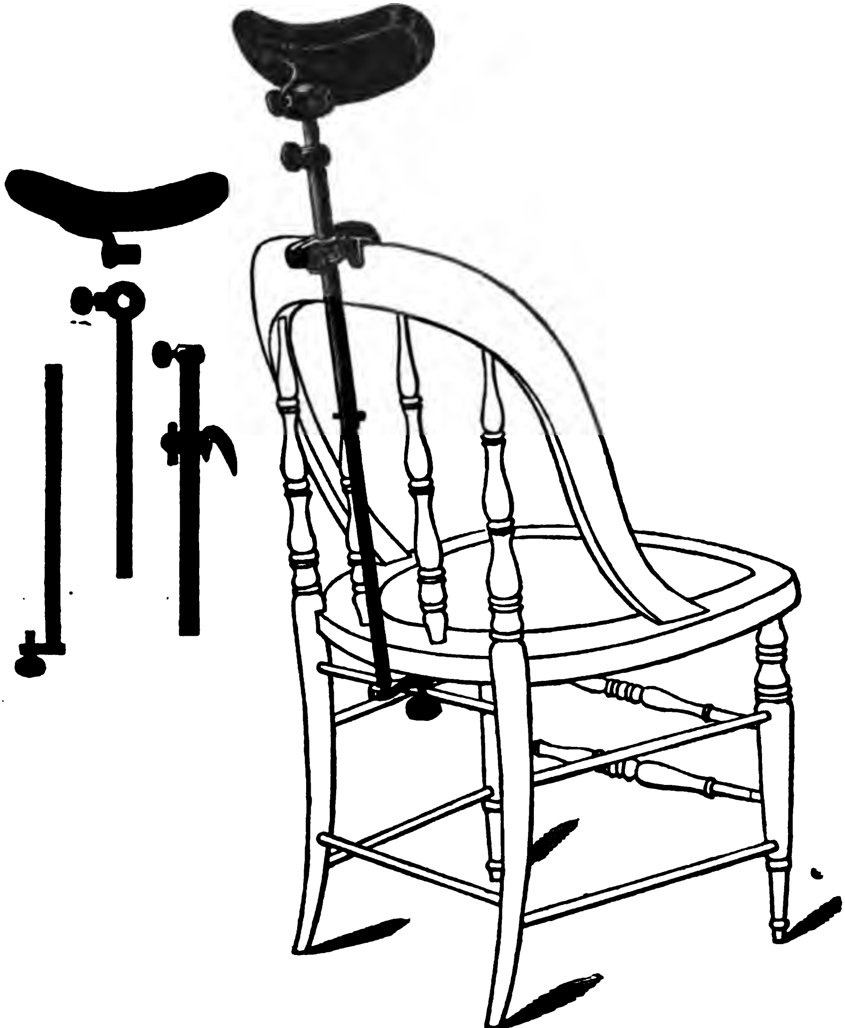

This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 18 x 4 inches.

PRICE, $5 00.

SNOWDEN & COWMAN, 9 W. Fayette Street.

SNOWDEN & COWMAN'S
—NEW—
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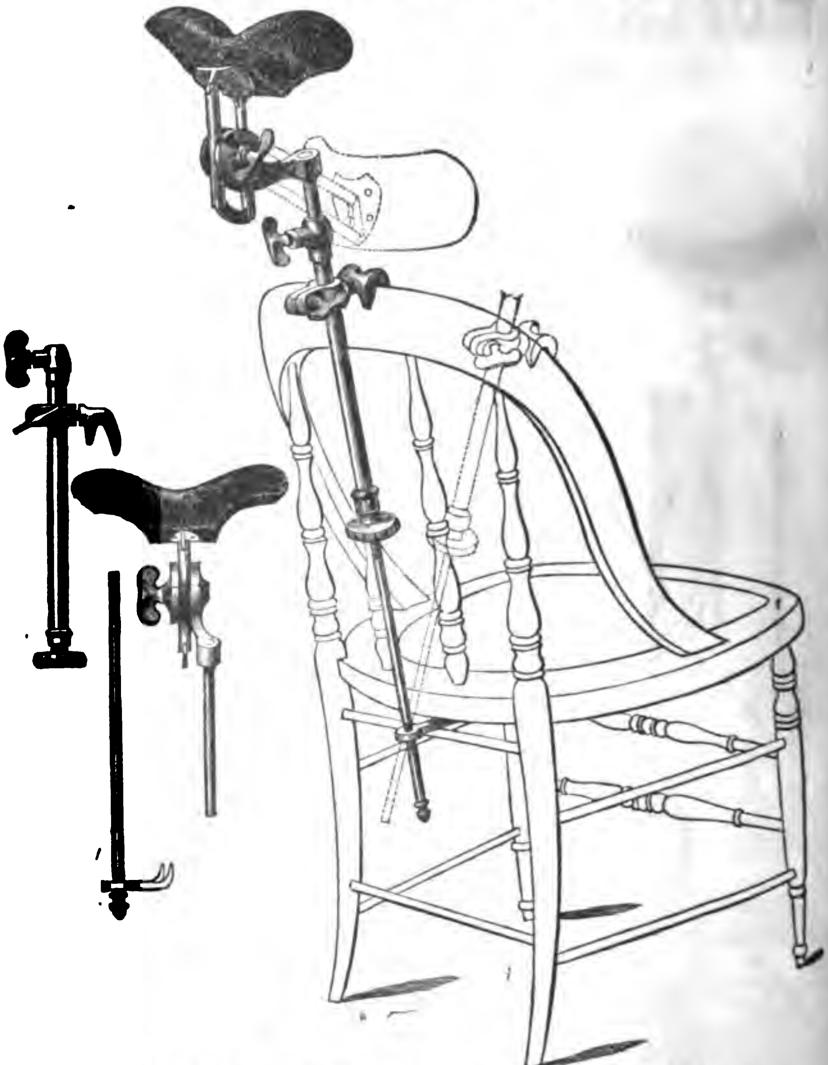

PRICE, *Full Nickel Plated,* - - ***$10.00***

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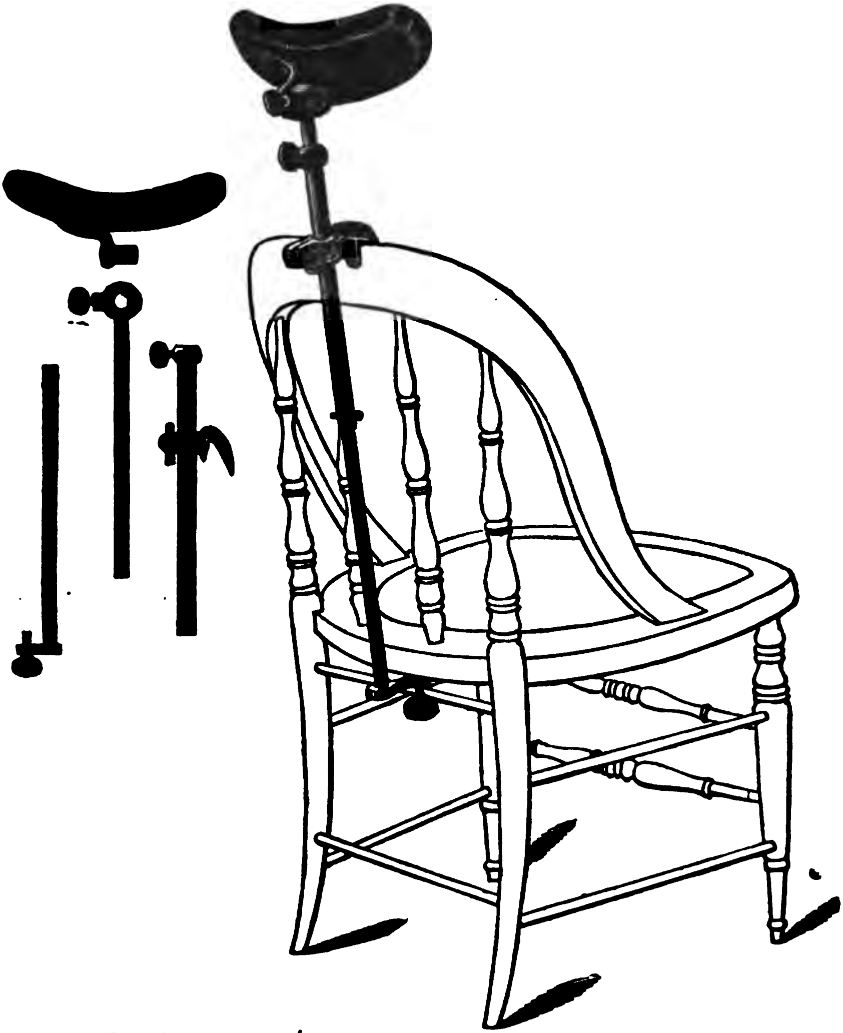
SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Rest.



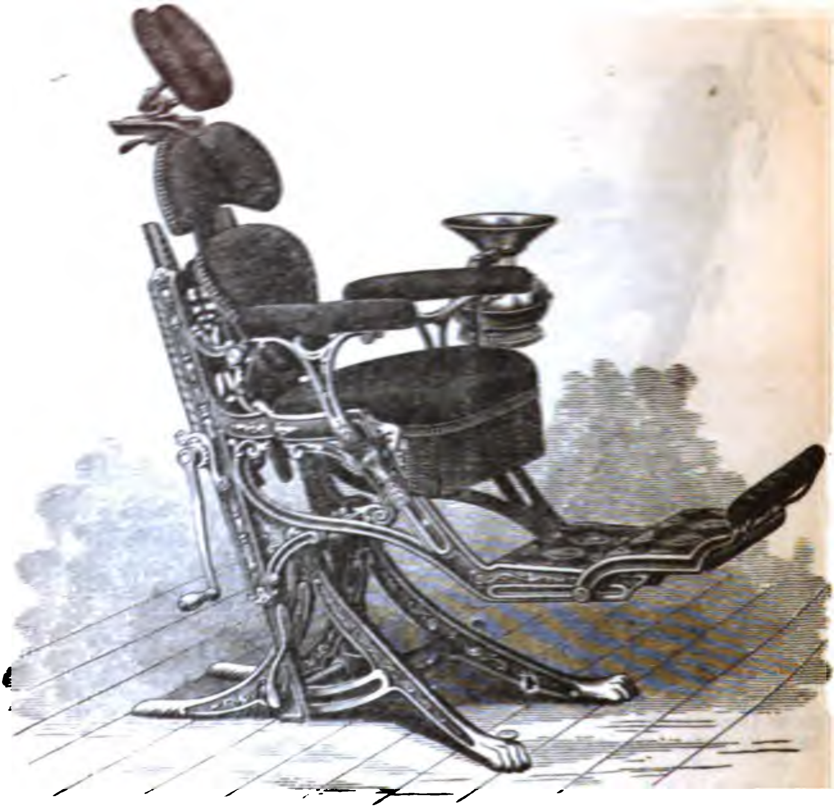
This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 00.

SNOWDEN & COWMAN, 9 W. Fayette Street.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$180.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery .	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

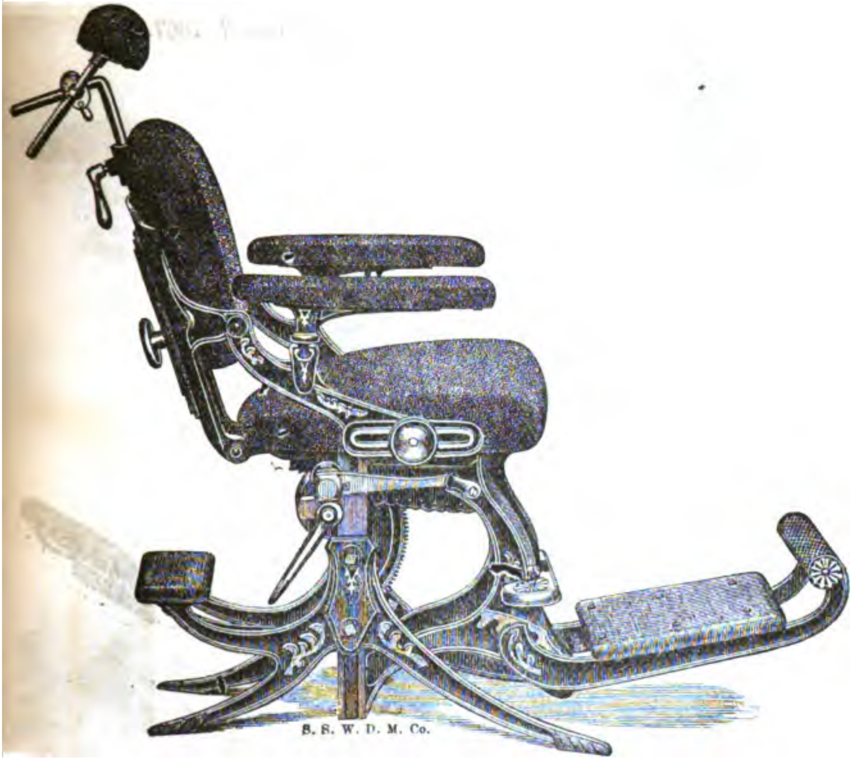
PRICE.

In Corded Upholstery.	$105.00

We supply either style of the Morrison Chair, with or without Casters. ordered with Casters, the price is $10.00 extra.

r Sale by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

THE CYCLOID CHAIR.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - - - -	$ 80.00
" " " Best Quality Maroon or Green Plush,	95.00

For Sale By SNOWDEN & COWMAN.

Steurer's Plastic Gold.

THIS is a chemically pure Gold in a plastic state without admixture of any foreign substance, and has been in extensive use for the past three years by dentists at home and abroad.

It is no foil or modification, but can be used as easily as an amalgam, and the filling can be made as dense by hard pressure as foil by the mallet. It has a *spreading quality* before it is completely condensed so that it will adapt itself perfectly to the walls of any cavity.

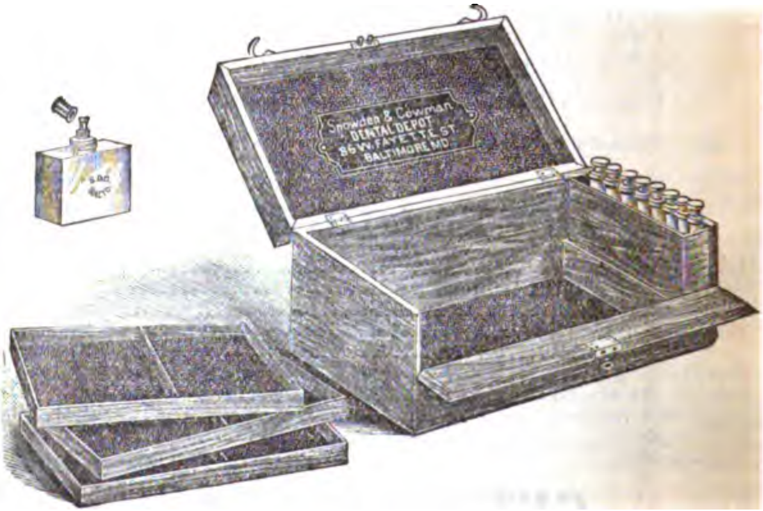
Beware of imitations which have sprung up within the last year on account of its great success. Be careful to see that it is in the shape of small square pieces, packed in bottles, and labeled *Steurer's Plastic Gold*, because the imitations, although they may apparently work in the commencement, do not make a solid filling, but gradually crumble away.

Price per Bottle, 1-16 oz, $2.50. Cash with all orders.

SOLD AT ALL DENTAL DEPOTS, OR

Dr. J. A. Steurer, 114 W. 19th St. New York City.

Student's Dental Instrument Case.


Snowden & Cowman
DENTAL DEPOT
86 W. FAYETTE ST.
BALTIMORE MD.

Manufactured and For Sale by

Snowden & Cowman,

Trade Supplied. 9 W. FAYETTE STREET.

AMALGAMS.

Townsend's	$3.00	per ounce
Chicago Refining Co's	4.00	“ “
Caulk's Par-Excellent Alloy,	3.00	“ “
Standard Dental Alloy,	6.00	“ “
Lawrence's	3.00	“ “
Arrington's	2.50	“ “
King's,	3.00	“ “
Sterling Amalgam,	3.00	“ “
Chase's Alcohol-Tight,	3.00	“ “
Olivers Amalgam,	3.00	“ “
“ White Amalgam,	5.00	“ “

CEMENTS.

Roman Cement, best in the market,		$1 00
Agate Cement, in 1 oz. Boxes,		2.00
“ “ “ ½ “		1.50
Weston's Insoluble Cement, ½ oz.,		1.50
Dr. Flagg's Plastic Enamel,	per Pk'g,	2.00
Fossiline,	“ “	2.00
Metcalf's Cement,	“ “	2.00
H. D. Justis's Insoluble Cement,		
1 oz. Package, 1, 2, 3, 4 Colors,		3.00
½ “ “ any above “		1.50
H D. Justis's Acme Cement,		
One oz. Package,		3.00
Half “ “		1.50
Dr. T. B. Welch, & Son, Art. Dentine,	per Pk'ge	1.50
“ C. N. Pierce Phos. Zinc,	“ “	2.00
“ T. O. Oliver's Oxy Phos,	“ “	2.00
“ Smith's “ Chloride,	“ “	1.00
Houghtons's Os-Artificial,	“ “	1.00
Poulson's Mineral Plombe,	“ “	2.50
Dawsons's Mineral Cement	“ “	1.50
Caulks's Diamond “		
Per Package, 2 Colors,		1.50
“ “ 1 “		1 00
Caulk's Hydraulic Pebbles, large Pk'ge,		2.00

DENTAL RUBBER.

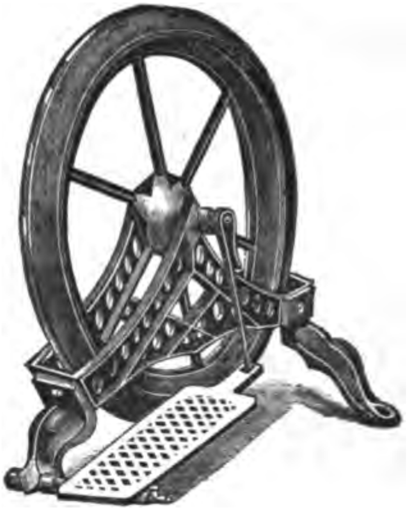
Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	“	2 25
Holdfast Rubber,	“	3.00
Doherty No. 1,	“	2.25
“ “ 2,	“	2.25
Star Rubber,	“	3.50
Sam'l S. White's Bow Spring,	“	2 75
Whalebone Rubber,	“	3 00
Sterling Rubber,	“	3.00
Black Rubber	“	2 50

GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$2 50
Sam'l S. White's	“	2 50

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed,* - - - - - *$8.00

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,
BALTIMORE, MD.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
" " " 2. "	37 50
" " " 3, " (upright)	38 25
" " " 4, " "	37 75
" " " 5, " "	31 25
" " " 6, " "	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright " Leather Covered, " " "	10 00
" " Japanned, " " "	5 00
Gas Bag, 4½ gallons of capacity	2 25
" " 7 " "	3 50
Stand for 100 gallon Cylinder	4 50
" " 500 " "	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
" " 500 " "	35 00
Refilling 100 gallon Cylinder	2 50
" 500 " " 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	26	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 50	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 " " " "	3 75
20 " " " "	7 00
Pound	35

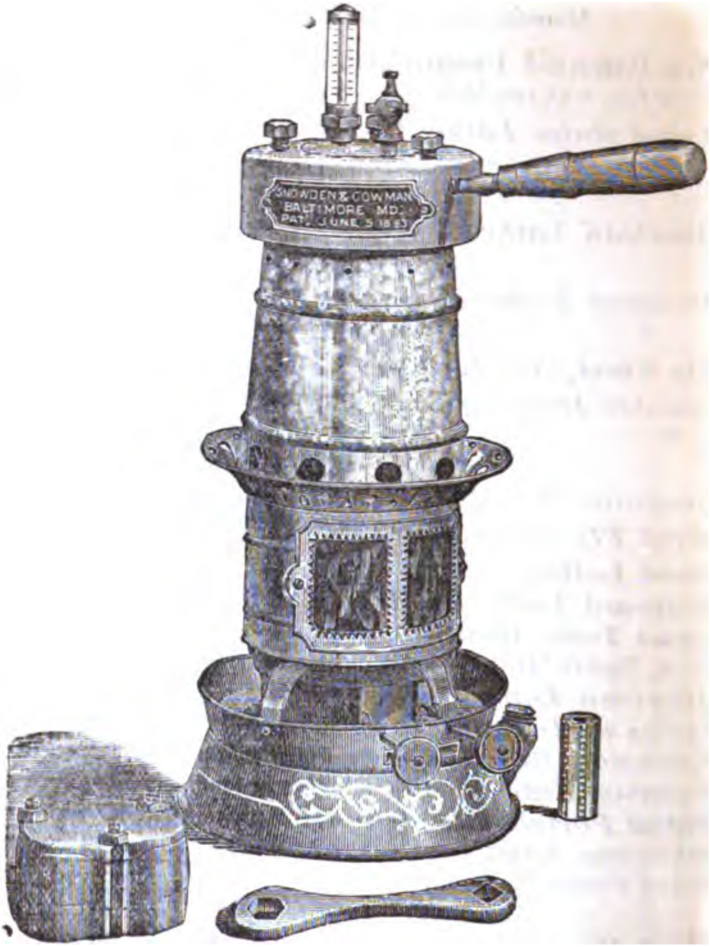
Boxing extra.

DENTAL PLASTER.

Barrel	$ 3 50
Half-Parrel	2 50
Quarter-Barrel	1 60
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

Manufacturers of the following articles:

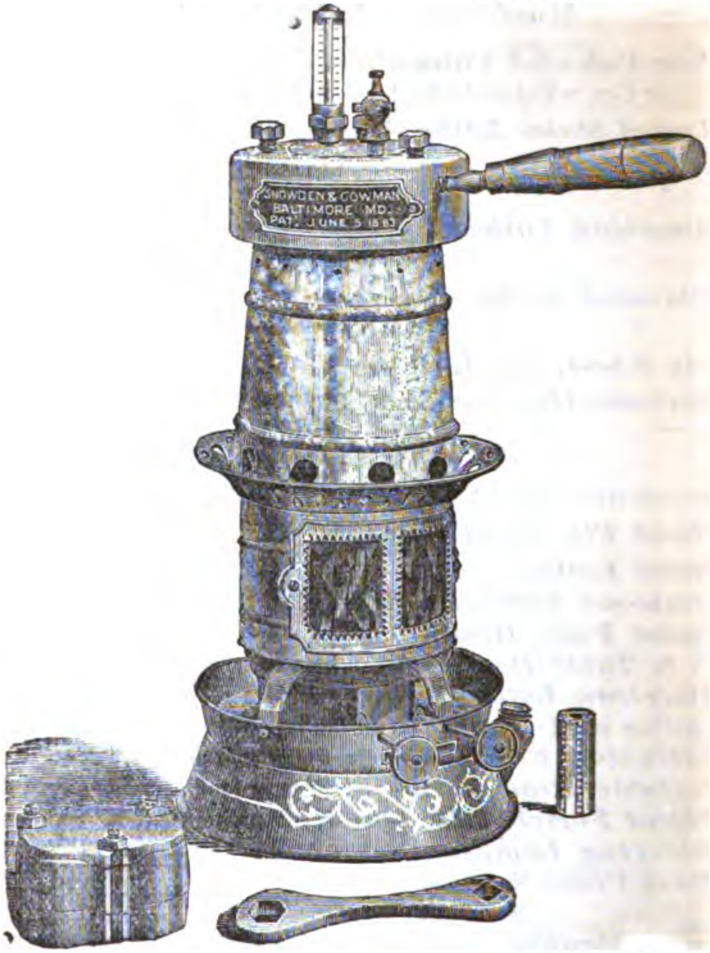
New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks, - -	18 00
United States Lathe—Long Spindle, - -	16 00
" " " Short Spindle, - -	16 00
" " " Stand and Cord, - -	12 00
American Lathe, - - - - -	15 00
" ' Extra Large Driving-Wheel, -	16 00
Diamond Lathe—Complete, - - - - -	14 00
" " Fly Wheel, - - - - -	8 00
Fly Wheel, No. 1, (New) - - - - - -	8 00
Portable Hand or Foot Lathe—Complete, -	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe, - -	4 50
Hand Fly-Wheel Lathe, - - - - -	4 50
Hand Lathe, - - - - - - - - -	4 00
Diamond Lathe Head—Polished Brass, - -	6 00
Socket Table Head, - - - - - -	5 00
U. S. Table Head—holes in base to screw to table, -	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle, -	75
Extension Brackets—weight only five pounds, -	6 00
Portable Head-Rests—weight only four pounds, -	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps, - - - - - - -	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new, - - - - - -	1 50
Ingot Moulds—broad base with handles, No. 1 -	2 25
" " " " No. 2 -	2 75
" " " " No. 3 -	3 25
Bailey's Moulding Flasks,—per set of 2, -	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 50
Britannia Impression Cups—long handles, various styles and 27 sizes—each,	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

—:o:—

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right: and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

—:o:—

After long experience in Safety Valves, Stops, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—HOWARD W. HOOPES, D. D. S.

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—DRS. WILLIAMS AND PENNINGTON.

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—C. E. DUCK, D. D. S.

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—THOMAS H. DAVY, D. D. S.

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—BERNHARD MYER, D. D. S.

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—C. E. BIERBOWER, D. D. S.

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—WM. B. FINNEY, D. D. S.

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

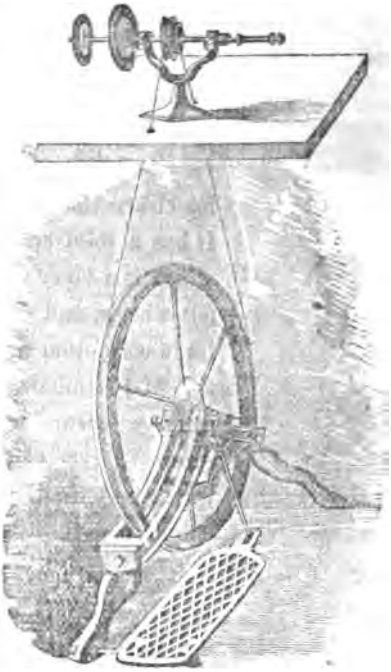
SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

The Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

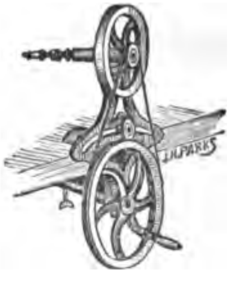
This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.

PRICE.. .....$8 00

DIAMOND FLY WHEEL AND HEAD.

Complete, boxed..PRICE $14 00

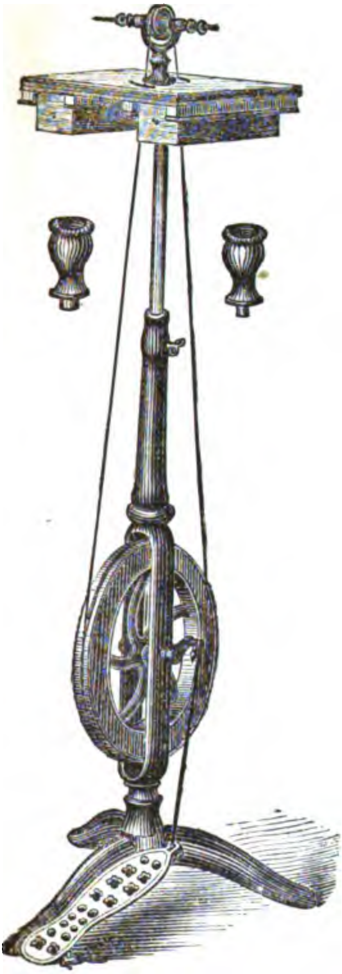
QUADRANT FLY WHEEL LATHE.



By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel with brass washers and two chucks complete. Weighs only four pounds.

PRICE..$4 50

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

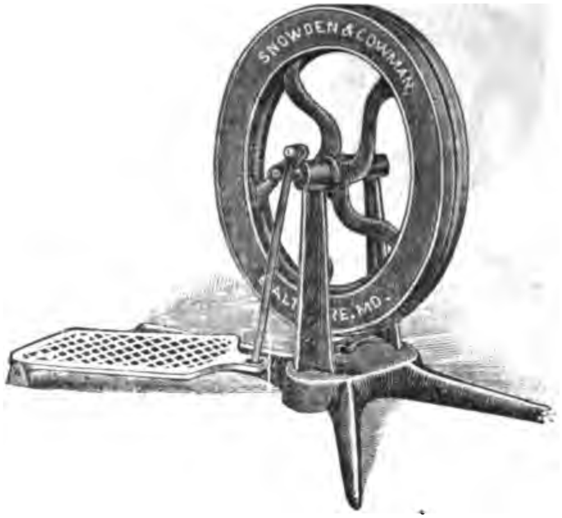
Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

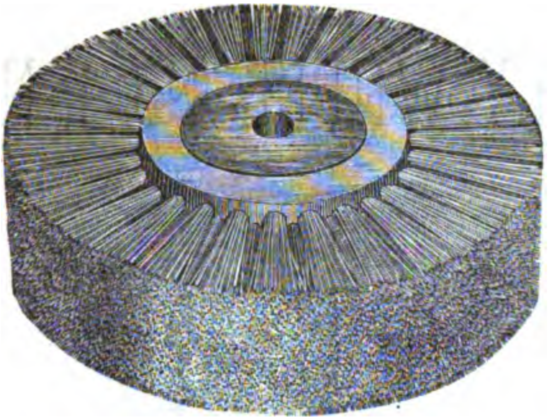
Price Boxed, - - - - - - $8.00

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

NOVELTY BRUSH WHEELS.



STRAIGHT BRISTLES (as per cut.)

No.	3	1	Row	Stiff	Bristles,	1½	inches	diameter,	each	$0.10
“	4	1	“	“	“	1⅞	“	“	“	.14
“	1	2	Rows	“	“	1⅓	“	“	“	.15
“	2	2	“	“	“	1⅓	“	“	“	.15
“	5	2	“	“	“	1⅝	“	“	“	.18
“	6	2	“	Medium	“	1⅝	“	‘	“	.18
“	8	2	“	“	“	1½	“	“	“	·18
“	10	2	“	Soft	“	1½	“	“	“	.18
“	7	2	“	“	“	1½	“	“	“	.18
“	9	2	“	“	“	1½	“		“	.18
“	11	2	“	“	“	1⅞		“	“	.20
“	14	2	“	“	“	1⅞		“	“	.20
“	13	2	“	Medium	“	1⅞	“	“	“	.20
“	19	2	“	Soft	“	2⅜	“	“	“	.25
“	22	2	“	“	“	2⅜	“	“	“	.25
“	21	2	“	Medium	“	2⅜	“	“	“	.25
“	20	2	“	Stiff	“	2⅜	“	“	“	.25
“	18	3	“	Soft	“	2	“	“	“	.28
“	17	3	“	Stiff	“	2	“	“	“	.28
“	26	3	“	Soft	“	2½	“	“	“	.34
“	50	3	“	Soft	“	3	“	“	“	.37
“	30	4	“	“	“	4	“	“	“	.44

CONVERGING BRISTLES.

No.	16	3	Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.28
“	15	3	“	Stiff	“	2⅛	“	“	“	.28
“	24	3	“	Medium	“	2¼	“	“	“	.34
“	23	3	“	Stiff	“	2¼	“	“	“	.34
“	28	4	“	Medium	“	3	“	“	“	.44
“	27	4	“	Stiff	“	3	“	“	“	.44

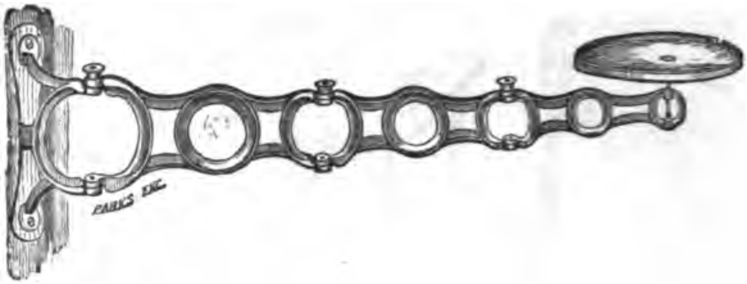
STRAIGHT BRISTLES—LONG SHANKS.

No.	52	2	Rows	Stiff	Bristles,	1½	inches	diameter	each	0.18
“	66	2	“	“	“	1⅞	“	“	“	.24

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2	Rows	Stiff	Bristles	1½	inches	diameter	each	0.18
	65	2	“	“	“	1⅞	“			24

Snowden & Cowman's Extension Bracket.

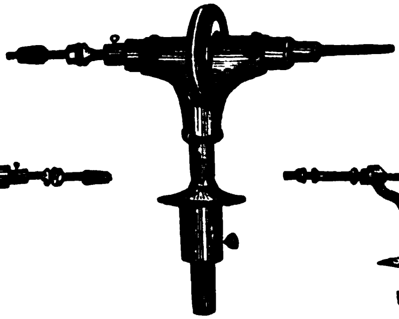


This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

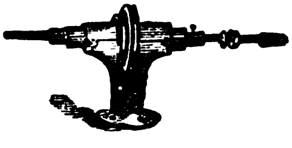
Price, Round Table as per cut, - - - - - - - - $6 00.
Square " with drawers. - - - - - - - - 8 00

TABLE HEADS.

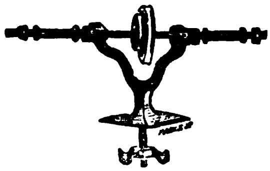
A.



B.



C.

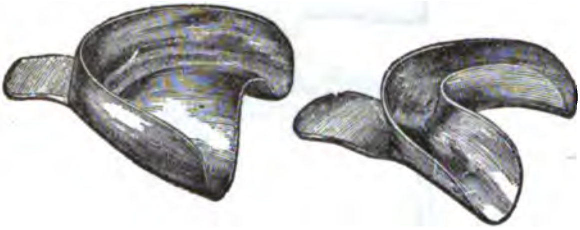


A.—SOCKET HEAD.—The socket screws to the table, has a set screw in the lower part, the head slides four inches to tighten the strap or vary the height from the table.................................PRICE $5 00
B.—U. S. LATHE HEAD, with holes in the base to screw to any table.
PRICE—Short Spindle (as per cut B)................$4 00
" Long Spindle............................ 4 00
C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which retain the wheels and brushes, are of Brass. The spindle is of the best unannealed hammered steel, and of the size to suit the holes in the wheels.
PRICE................. ....$6 00

BRITANNIA IMPRESSION CUPS,

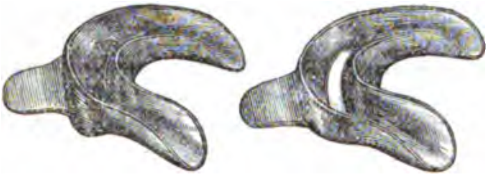
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



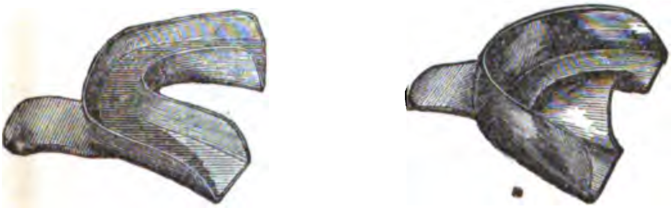
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



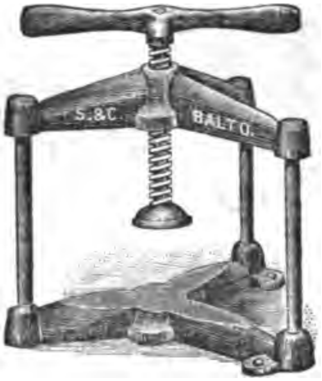
PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each...................25cts

SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S
Flask Presses.

No. 1, Old Style Improved.



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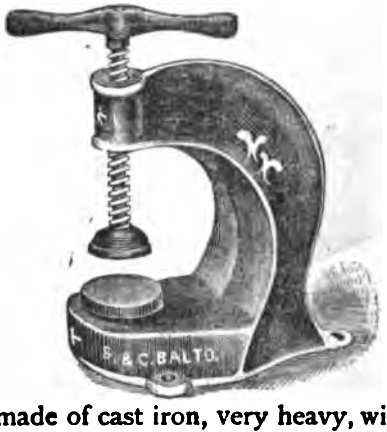

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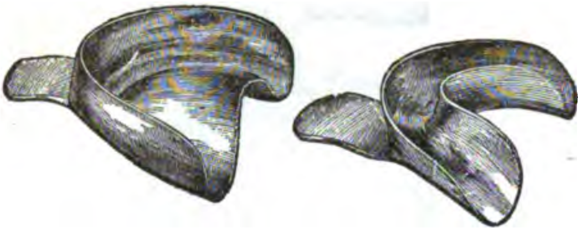

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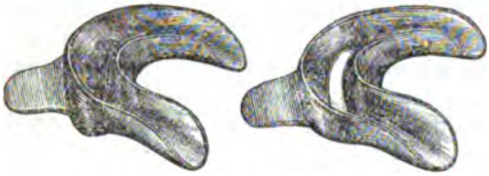

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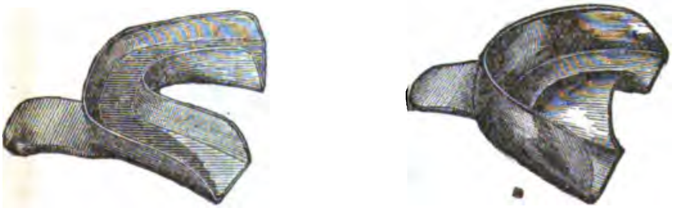

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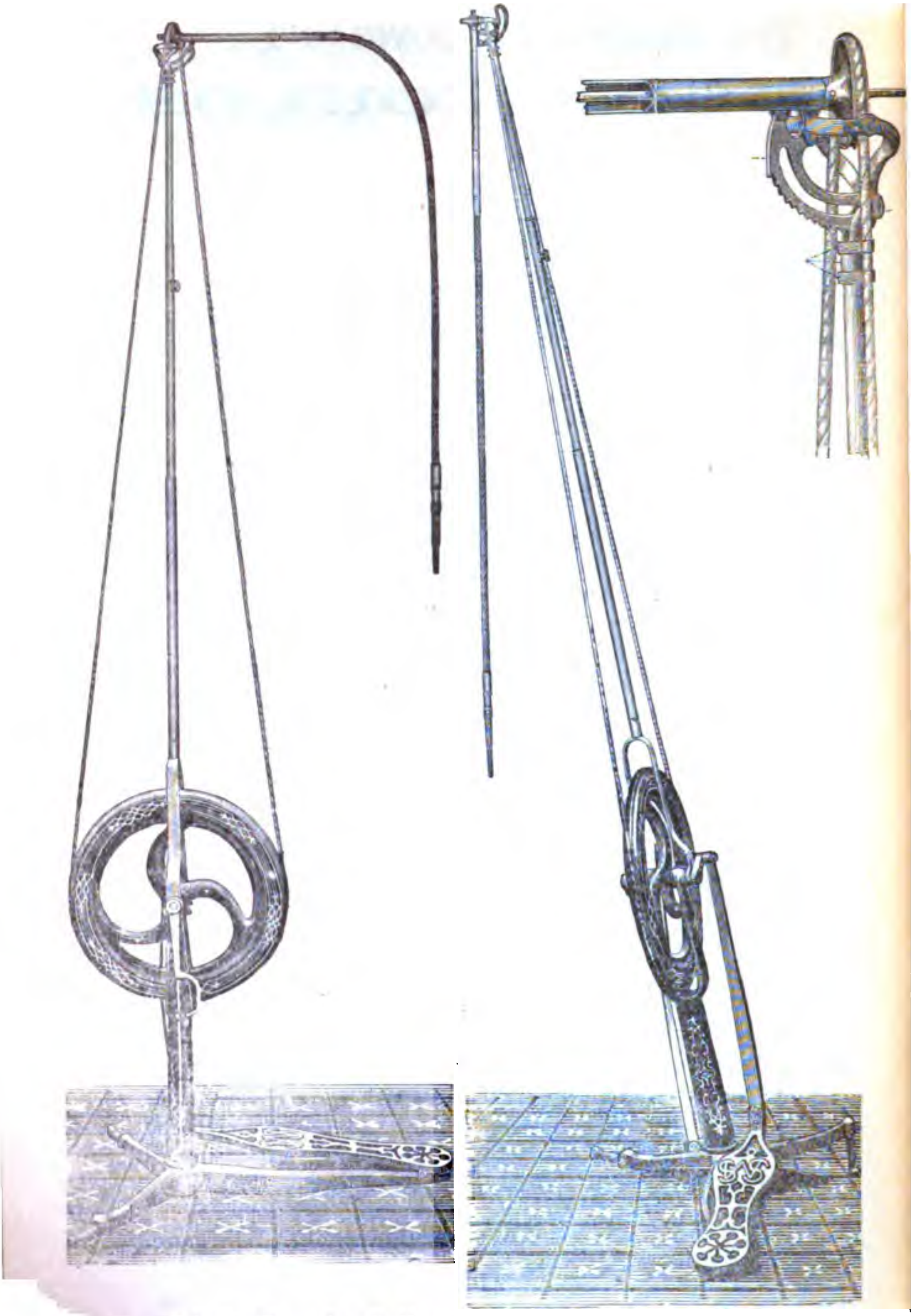

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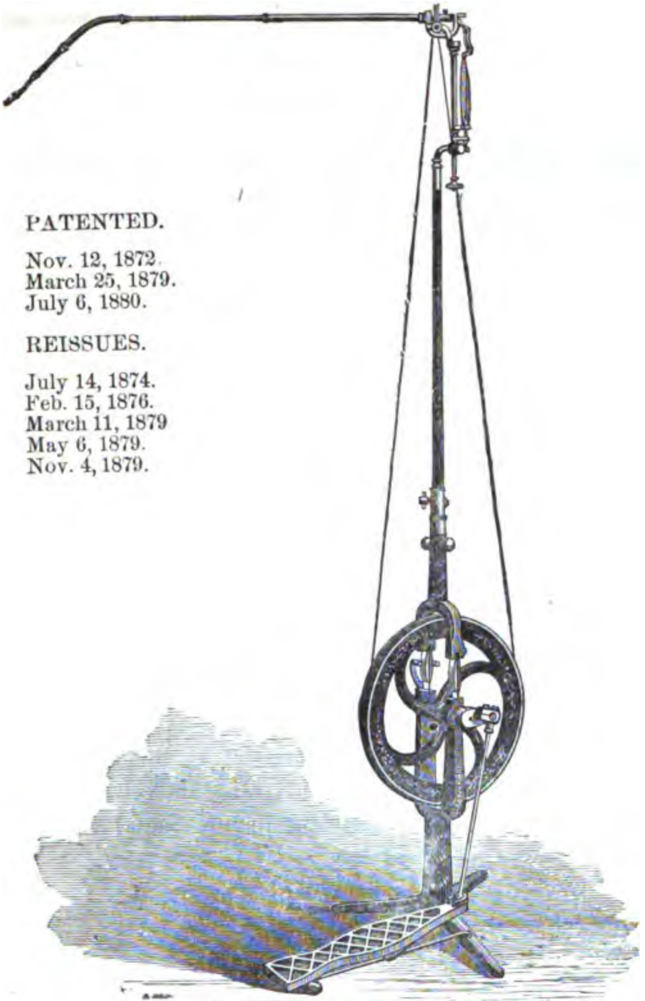

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OF

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The first and most important question that is presented to the mind of every man who undertakes the care of a proximate surface is the question of contour. There can be no evasions of this question by one who desires to be equipped for the best work of the present day.

I will not pause here to go fully over the ground of the old discussion of so-called permanent separations *versus* restorations. I may as well state plainly at the outset that I am an uncompromising advocate of the restoration of the shapes of the teeth, as a general rule of practice. The reasons for this are so many that a long session would be required to relate them in detail; and, moreover, they are so self-evident that it would seem to be a waste of time and an affront to your intelligence to go over them. And yet, as hinted by your committee, after all that has been so conclusively written against the pernicious habit of filling, and all that has been done in practical work by so many of our best operators in proof of the advantages of restorations, it still remains with many an open question, and to-day, throughout the world, if men's opinions are to be judged by their works, there are a very large number of operators, —many of whom we all know and respect, and some of whom we love,—who are still so evidently bound by habit to the unconscious dangers and temptations of the old practice of filing that it would almost seem as if we were yet in the babyhood of our profession, so that, after all, it seems as if I must pause a moment to touch upon the dangers of the one practice and the advantages of the other, even if I betray my "bias" to the point of weakening my argument to your minds. This "bias" is not of recent date. It is a slow growth, and as inevitable and unalterable as the conviction that two and two make four. In astronomy the "personal equation" has always to be taken into account. Through powerful glasses, that greatly magnify the slightest variation of vision, no two persons can be found who can see and describe the heavenly bodies exactly alike. And so in our field of effort it cannot be expected that all should see with the same eyes, and differences of opinion must be expected on most subjects; but on this, which it seems to me is capable of distant definition, I fail to see how there can be, if we really understand each other, a very wide difference of opinion.

Our opinions are the result of accumulated experiences, and one who has had long experience may perhaps lay claim to the privilege of speaking with some degree of confidence on such a subject as this.

If I venture to sketch my experience in justification of my convictions on this subject, I trust it will be considered a legitimate means of argumentation, and not an egotistic desire to thrust myself into the subject. And it will be the only justification for the dogmatic tone this paper may assume.

In order to make the points I desire to make, I must refer to and quote from a paper of mine on the subject, read in this city before the Odontographic Society of Pennsylvania, in 1870. In that paper I advocated the perfect restoration and, in some cases, the slight exaggeration of the shapes of the teeth. This will be shown by the following quotation:

"If we take nature as our guide, and desire to attain to her perfection, it is evident that, between molars and bicuspids at least, the file should only be used as it may facilitate the operation of restoring with gold the lost shape of the tooth. * * * If there must be a departure from the natural form of the teeth, I would prefer in such cases the other extreme—that of leaving the gold in proximate cavities slightly projecting, so that it, and not the tooth, shall rest against the adjoining tooth, or the filling in the adjoining tooth, as the case may be. * * ° I do not wish to be understood as advocating the building out of rounded knobs of gold between the teeth, so that they shall be held apart; but I would ask your attention to the propriety of packing the filling a little beyond the original outline of the tooth and finishing up with thin, trowel-shaped files and sickle-shaped scrapers, leaving the gold, when finished, *quite* as full as the tooth originally was, rather than pass between them a separating file, that would leave a flat, proximate surface. I should prefer a slightly unnatural fulness, rather than have a space, or an unnaturally flat surface."

The point I wish to make by this quotation, and which I cannot make in any other way, is, that a very large proportion of the proximate fillings made on this general plan before this was written are standing to-day, after twenty years' use, in good condition.

This is stated in no boastful spirit, but with a desire to present the exact facts. A very large proportion of the fillings made several years later, when I had become a convert to Dr. Arthur's system, have since been removed, many of them at great cost of time and labor, owing to the difficulty of restoring the lost shapes of the teeth. If Dr. Arthur's book had never been published and I had not been influenced by his earnest personality, but had held to my early plan of restoration, my patients would have been saved endless annoyance, and I should have had no dark period in my professional life to look back upon. The publication of his book and the circumstances of making his personal acquaintance, followed by a long and interesting correspondence with him, led me step by step to look with favor on his system, until I came to the point of making all the spaces described by him. I became so demoralized as to willing destroy the shapes of the teeth that I had before guarded with jealous care.

The result of that practice finally became a source of discouragement and mortification to me. Failures which formerly occurred only in reasonable numbers, under this system became surprisingly frequent. Irritation of the gums, and change of position of the teeth, which could not occur before, so frequently followed this practice that, after enduring it a few years, I was glad to return to the old one of the restoration of the shape of the teeth. I have continued this practice to the present day, and I expect to continue it to the end. As I look back over the past twenty-five years I see so much to commend in it, and so little in the other, that there is left for me no other choice. Having been twice on one side of the question and once on the other, I feel entitled to speak with no little confidence.

In 1870 the restoration of the shapes of the teeth was not common practice. There was little to encourage one in that practice at that time. It was not unusual for the older operators, in examining a large contour filling, to probe along the cervical border, and with an ominous shake of the head predict that failure would follow there in a few years. But as a matter of fact failures have not followed in any considerable number of cases, even after all these years. These operators, taught by their experience to expect failures at all the sheltered points, expected it here. They failed to see that a new set of conditions had been established by which decay was almost certain not to occur. But they could not be made to believe this, and it could not be proven until after many years—except to those who had the faith that is born of enthusiastic and irresistible conviction.

Fortunately, during that period when Dr. Arthur's earnest words— for he was as earnest as he was conscientious —had unsettled my convictions, there were still many patients whose teeth I never touched only to restore them, and to-day they are the patients most creditable to me. Many of them have large contour fillings that cost pain and effort; but, once being done so that the teeth were held in position and the gums protected, the years come and go and the patients forget that they have teeth at all. This is no fancy picture, but can be verified at any time. In my own teeth are large contour fillings, described in the article from which I have quoted, and put in by Dr. Varney over twenty years ago. They stand untouched from the day they were finished, and can be seen to-day by any one who cares to examine them. They have been a priceless benefit and comfort to me, and they stand an eloquent example of his matchless skill and an unanswered argument in favor of the restoration of the shapes of the teeth.

It is only after a long stretch of time that a just estimate can be made of the relative value of these opposing systems. It is easy to see that at first a clear gain seems to be made by making permanent separations. It takes years before the evil is noticed. It was partly this delusion that led me to adopt it; and it required several years before I saw that I was treading on dangerous ground. It was at first a great satisfaction to cut between molars or bicuspids where a cavity was suspected, and to find it and fill it easily and quickly, and flatter myself that the proximate surfaces were laid open so that they could be easily examined, and yet the gum but little, if any, disturbed. I could not then anticipate the slow change of position of the teeth; the disturbance of the festoons of the gums, owing to the loss of the bulge of the teeth that nature had designed to protect them; the recurrence of decay near the gum, causing the melting away of the shoulder that had helped to hold them in position; the slipping of food through, against and under the gum; and finally, the need of large fillings, that must now be made under most unfavorable circumstances. With the teeth tipped, the gums disturbed and sensitive, and the cavity extending on the root of the tooth, the task is much harder than if the cavity had, when of fair size, been filled by cutting down from the grinding surface and making a contour filling which should be so shaped that it would stand firmly against the neighboring tooth, and of such size that its borders would be free, except along the cervical edge, when the teeth had settled to their proper place. If the cavity had been neglected until it had become large, if filling on the same plan, it would be still safer; because then the cervical border of the filling would have to go under the gum, and if properly done, no further anxiety need be felt for it.

If the teeth chanced to be of good structure and the cavity small, how much better to spread them with a separator the thickness of a sheet of thin sand-paper, and cutting with small burs, or specially shaped, delicate excavators, from the grinding, lingual or buccal aspect, fill them with gold or copper amalgam, and allow them to go back to their natural positions, with their contour absolutely untouched.

Following this plan, it would not be probable that a patient would come in saying, as one did to me some years after the Arthur aberration: "This space between my teeth is giving me no end of trouble and annoyance, and I think there must be a cavity there. I have named it 'Perry's Chasm.'" Nor would there have been made to me the following remark: "Doctor, do you notice that on the left side, where many years ago separations were made between the back teeth, nearly all the cut surfaces have had to be filled; while on the other side, where no cutting was ever done, the teeth have never been filled and are still in good condition."

Only a few days ago a lady said to me: "Do you remember that many years ago you wanted to cut between some of my back teeth because you thought there were or would be cavities there, and mother begged you not to do it, and it was not done; and do you see that all of those teeth are still sound? Mother knew; did she not?"

I tell you, gentlemen, mothers do know; the public knows, and you may reason with all the plausibility at your command and you cannot overcome the widespread, instinctive dislike of that practice. You may flatter yourself that you have made a good argument, and as the patient does not get up and leave at once, you go on with your cutting and filling. But a year goes by and your patient does not re-appear; he has quietly slipped away to some one of these men who try to leave the teeth as nature made them.

The public calls this filing "taking off the enamel." It is more than that. It is taking off from the operator the armor of courage and confidence in his own ability to make his work a real blessing to his patient, and leaves him bare and unprotected against the temptation of doing hasty, botchy and inartistic work. The evil effects of this practice are not felt by the patient only, but indirectly by the operator, who becomes demoralized and ready to cut and hack with the reverence of a bull in a china closet, unmindful of the fact that nature, in her constructive processes, has produced in the teeth of man a marvelous example of the adaptation of means to ends—of means by which a given amount of tooth materal is distributed so as to secure a combination of the greatest amount of strength with the greatest amount of beauty of form and outline. The marvelously beautiful curves and outlines that are shown by the teeth could have held the attention and fired the imagination of even Michael Angelo, who would have found in them examples of arches and abutments for his studies in architecture, and of models of grace and beauty of outline for his works of sculpture.

The cusps of the teeth suggest Gothic domes, and half of a cross section of a bicuspid is a perfect model of a Roman arch. If the enamel could be taken off the dentine as you would take a thimble of your finger, and could be viewed from the under side, it would present a series of arches and domes that might well serve as models in construction for the great temples of the world.

If the arches of a temple are made with bricks and stones that are laid so as to support the weight of the whole structure, it does not require a very lively imagination to see that the enamel prisms are also laid so that they may best support the weight of mastication. How long could it be expected that St. Peter's at Rome would stand, if on opposite sides a huge Arthur disk should cut away the side walls and parts of the dome? It would have been before this a crumbling ruin, as countless numbers of teeth are that have been so treated.

I venture the prediction that if Michael Angelo had been a dentist instead of one of the greatest artists and the greatest architect the world has ever known, he would never have sinned against himself by mutilating a tooth. Inevitably he would have been a contourist, for his great soul would never have been content except in the study and the reproduction of the perfect models that only nature —the source of all artistic inspiration—sets. You may say that it is absurd to speak of Michael Angelo in connection with the teeth; that he was a product of one of the great art periods of the world, and that this is a scientific age, and the teeth must be studied from the scientific and utilitarian stand-point. This is all true, aud yet in all candor I ask you where is there an instance in the whole range of art work where a close regard for the models that nature gives is followed by such utilitarian results as when the shapes of the teeth are restored. So that we must conclude that Dr. Webb did not without reason invoke so often the spirit of the great master.

To consider the subject further from this standpoint, it is safe to say that the public would not long tolerate an oculist who snips off a part of the eyelid in order to operate more easily on the eye; or a surgeon who, in amputating a finger, cuts off an arm; and yet it will sit down in a comfortable modern dental chair and let the teeth be cut and hacked, and will try to believe it is all right, because the operator has the reputation of being a splendid dentist.

The tooth might not be as valuable as the eyelid or as the arm but it was modeled by the same Great Designer, and the difference is in degree, and not in kind.

From the days when Dr. Dwinelle, in 1855, illustrated and described the method of restoring contours, and Drs. Atkinson and Varney, between 1860 and 1870, verified and extended that practice to the present day, many attempts have been made to follow it by men who have not always succeeded, because they have failed to see the full significance of a strict restoration of contours, and have not always prepared their cavities so as to get free margins, and have not always built their fillings out so that when finished the teeth shall have firm lateral support and the gum perfect protection.

To a certain extent, it is unfair to admit the testimony of such operators against contour-filling. The system of restorations is one that must be practiced thoroughly if it is practiced at all. Wherever contours are attempted, they should be made so as to touch at or near the grinding end of the tooth. Dr. Dwinelle puts the whole subject in a nutshell when he says: "The teeth should be made to impinge at their point of largest circumference." There can be no compromise here. If even a slight space be left between them at this point, food will crowd through and lodge against the gum, and cause all the annoyance of the worst kind of permanent separations. This is so important that I should go to the other extreme and say that it is unnecessary, and sometimes unwise, to fully restore teeth that, from the loss of a neighbor or a change in the occlusion, must eventually move slightly apart. I think it better to anticipate such inevitable and permanent change of position, and make at once a free parallel-sided space down to the gums; for such a space is less annoying than one wide at the gums and narrow at the grinding ends of the teeth.

You will see by this that I do not advocate contour for contour's sake. However much we may admire the form of the tooth, and however strong our desire to reproduce it, this must not be done if it is not to the advantage of the patient. The utilitarian side of the question must always be considered first. I wish to state this with great clearness, lest it may appear that my bias is for contour in order to keep alive my reverence for nature, and to satisfy my love of form and outline. It must be admitted that this parallel sided space, so made that the teeth do not touch and the food does not become imparted against the gum, is one that, if it can be maintained permanently, gives a good result. It is the only separation between the bicuspids and molars that, from my standpoint of observation, can be justified. In effect, in a very modified way, it is like the extraction of a tooth. But the conditions do not often occur where it can be safely made. When free to move, the teeth migrate; and such a space as this must not be made unless the teeth will be held in place by the occlusion. Movement of the teeth is always in direction of least resistance; and if they are cut and allowed to move, not even an operator of long experience can always tell where they will be found after a few years have gone by. The cutting between sound teeth in anticipation of decay, so loudly lauded by some operators a few years ago, was a part of the Arthur system, and will die with it.

I have given some of the reasons why I am an advocate of the restoration of the shapes of the teeth. There are many more, and some of them are as important and convincing as any I have stated. In fact, there are so many reasons for that practice that unless I deny the logic of experience and reject the evidence of my senses, there can be no choice for me but to adopt it. I cannot believe that my bias has led me to see the subject out of its true proportions;. for, whatever the practice may still be, I hear from all sides strong expressions of regret that Dr. Arthur's book was ever published. And, by the way, is it not a curious fact that a man who had been one of the first to discover the cohesive properties of gold, by the means of which the shapes of the teeth could be restored, should have advocated the permanent separation of them? But even his faith in that system was not so strong as his book, to a superficial reader, would imply; and I could quote from his letters to me to show that the book was written for the profession as he knew it, and not for it as it might and would be. He was too honest not to admit that, for those who could and would make restorations, that was the best practice.

Some years since, Dr. E. J. Dunning, one of the most accurate workers ever known to the profession, said to me that it was the regret of his life that he had ever cut the teeth so much. And only a few days ago I had the supreme satisfaction of being strengthened and confirmed in my faith in this practice by hearing Dr. Benj. Lord, whose conscientiousness and earnestness are known wherever the language is spoken, and whose enthusiasm for the art of saving teeth grows stronger and glows warmer with his advancing years, say that it was the regret of his professional life that he ever fell into the practice of cutting away and shaping proximate surfaces in order to secure permanent separations after filling, and also that he advocated as well as practised filing and shaping the teeth to prevent decay.

I have had deep feeling on this subject for a great many years, and you must pardon me if I give utterance to the satisfaction I feel when I hear such words as these, and you must let me further express the pleasure I feel in knowing that Drs. Dwinelle and Atkinson, pioneers in this work, are here with us, spared to see the day when the irresistible tide of ripened professional judgment sets in their direction.

If I have spoken severely of the injuries done to the teeth by the system of permanent separations, I must not overlook the fact that it is a system that has some merit, otherwise it never could have been so long and so widely practiced. There can be no question that innumerable numbers of teeth have been saved by it; but those were the ones that ran the gauntlet and escaped the danger; and, after all, it is this risk and danger that I want to see our profession freed from.

We must also be careful not to allow a suggestion of harshness in speaking of the early operators who practiced the system. They did the best they could. They did not have the conveniences and appliances of the present day; and, moreover, sufficient time had not elapsed for them to see the evil effects of that practice. Dr. Arthur, who did more than any other man to establish the system, must be spoken of only in terms of respect, for he did in his day and in his way only what he thought was best for the profession. Nothing would be more ungracious than to speak in any but the most charitable terms of these operators, who did not and could not do in early professional life what can be easily accomplished at the present day. If we attempt to measure by too high a standard, where shall we find one of us who will not be too short. Let us overlook the past and be thankful for the bright future before us, remembering always that to be charitable and helpful to each other is to do the most to advance the cause of our beloved profession.

There is still another side to the subject that must not be allowed to pass without consideration. Partly by its own impulse the pendulum swings to the other side of its arc, and some of the best operators, repelled by the evils of permanent separations, have gone to the other extreme, and in their eagerness to restore the teeth have cut them away far more than necessary, and have given themselves and their patients needless trouble in restoring them. In my judgment this was an error constantly made by both Drs. Varney and Webb. If this can be justly said of those accurate workers of gold, with how much more force does it apply to those who follow the same plan, but are not such accurate operators? I am fully convinced that it is an error which I have many times committed, and it is one that any one may easily fall into if they have not come to have what I will venture to call reverence for the natural teeth. It is one that has been encouraged by the use of the dental engine and by the use of cohesive gold. A graduate of one of our colleges came to me with hardly a dozen excavators, and those of the most useless kind, in his outfit. He prepared his cavities mainly with the dental engine. It is not surprising that a man like Maynard refuses to believe that modern dentistry has made the progress claimed for it. A disheartening picture could be drawn if one felt inclined to contemplate the injury that has been done by confining operations on the teeth within such narrow lines. To ignore the advantages of soft foil and to be unskilled in its use is a misfortune to the patient, to the dentist and to the profession. The man is dwarfed who is not as ready to apply one system as the other.

It would be better for our patients and better for dentistry if we could keep more in mind the idea that the human teeth are marvelous structures and worthy of the most patient and pains-taking efforts of the most accomplished men in the world.

And whatever method is employed they never will be saved without this painstaking care. While the physical properties of gold remain what they are, it is useless to hope for any easy method of filling with it large cavities on the proximate surfaces of the bicuspids and molars. It always has been and always will be absolutely impossible to get good results without hard work, so that in selecting the method we may as well dismiss at once the idea of finding an easy one. The search for such a one has resulted in an immense amount of bad work. The search for a rapid one is equally misleading. Under the pressure of a large practice it has done more to keep my own work below the standard I could wish to work to, than all other causes combined. If plastics are used the same patient care is necessary, if we are to get good results. In the very nature of things there can be no easy way to permanent success of any kind.—*International Dental Journal.*

ARTICLE II.

DENTAL TREATMENT OF CHILDREN.

BY DR. GARRETT NEWKIRK, CHICAGO.

We often make a mistake in our estimate of character in placing children at too great a distance from their elders.

If men are "but children of larger growth" it follows that children are but little men and little women. They have in them the same elements of human nature, and exhibit fully as much variety of disposition. They have simply less development and experience, and are usually but not always more impulsive. They have not had the experience which enables some adults, not all, to exercise self control.

But on the whole, I have not been able to detect any great essential differences between children and their elders. The elder has had some additional mental growth and training. If the training has been good, it makes him the better patient; otherwise he may be worse, his mind filled with unreasonable notions, dreads and fears. I should prefer the child untrained to the adult ill-trained. I should prefer a patient with all his experience to get, to one whose experience has been unhappy and misleading.

At the outset we are quite apt, I think, to underrate the intelligence of children. They are often treated practically on the assumption that they know nothing, while the fact is they know a good deal. It is assumed that they are incapable of an understanding as to why things are done, but should simply submit out of deference to their elders and as a matter of course.

There is one thing children know and seem to know instinctively, and that is who like them and who don't. They know the sympathetic touch from the unsympathetic, and recognize their friends even among strangers.

If any dentist is affected with the mania of child hatred, if he looks on children generally as being merely in the way and better out, as far as his practice is concerned, he may as well leave them out. He will only arouse all their worse elements, and if they have any spirit it all will be manifested in well deserved antagonism.

An adult who has been trained to habits of cool calculation, may endure pain at the hand of one he dislikes, and who dislikes him for the sake of results, but children are not equal to such hypocrisy.

Any dentist who hopes to do a family practice is all wrong in permitting himself to cultivate such a disposition toward children. Children cannot help being children, with all the peculiarities incident to childhood.

As dentists, they are on our hands and we cannot evade the responsibility which devolves on us. It is the part of wisdom therefore, to recognize the facts and govern ourselves accordingly. We frequently hear it said: "I haven't the patience." Well, if you haven't, the quicker you set to work to acquire it the better. It is our *business* to have patience; we *must* have it. It is a confession of weakness to say we have it not. It is shameful to cultivate impatience.

Now, as to some points of difference in disposition. I have found that some children have considerable reasoning power at a very early age. One four years of age could not be induced to take castor oil, the taste of which he abhorred above all things, but when its action was explained, and the reasons for its use given in simple terms, he took it like a Major. This child endured several operations on his teeth when the uses of filling had been explained to him. He was very strong willed and often obstinate, but when he was made to understand that the operation proposed would be valuable to himself, his will became an ally instead of an antagonist.

A reasonable child, with a spirit and temper of his own, will consent to the endurance of pain if the consideration of a benefit to be derived is explained. With a child of this sort it is necessary to have an understanding beforehand with regard to what shall be done, the time required, etc. He will not submit without an agreement, and he will not agree without what seems to him good and sufficient reason. Especially is this true regarding first operations, before one has acquired the child's full confidence.

Attention. Sometimes it is difficult to get this long enough even with a reasonable child, to make him understand what you purpose doing. Here a dentist needs to be something of a teacher. Often the child, like the adult, is a victim of false education, and comes to the office with his head full of wrong ideas. His preconceived notions and his fears prevent the calm and logical action of his mind. No time can be better spent than in getting acquainted with such a child. Whatever is done, whether it requires one visit or three, his apprehensions must be sufficiently removed to permit of a reasonable talk and understanding, before any operation of importance is attempted.

The curious child—the child full of curiosity. I think he is in the majority, but there are some especially curious with reference to things mechanical. Such children are usually of a friendly disposition, and if greeted cordially, made to feel at home, are readily approachable by the way of their curiosity. A great many things in the office are objects of immediate interest to them; they ask many questions which should be answered as satisfactorily as possible. Such a child should be given a hand glass, that he may see his own teeth in the preliminary examination, and then during operations so that he may view the various steps taken and their final results. His interest is half the battle won. It is unfair, unwise and unkind to require such a child to just sit and submit to whatever we choose, without giving him anything to do, or to divert his attention. Under such circumstances the sitting becomes simply an unrelieved tension on his nerves. Many adults find such treatment hard enough, and who can blame the child whose nerves refuse to bear the strain? As a principle of good common sense give the child somewhat to think about besides the one thing of simply enduring pain.

The nervous child. This type is well illustrated by the case of little Alice G., aged 7. She has been in the chair quite often, and I have filled several of her teeth, including one devitalized. She has never been hurt much. She is brave, but still has a nervous dread of every new operation proposed. It became necessary a few weeks since, to remove the almost rootless crown of a lower deciduous molar (her first bicuspids are coming very early). For fully five minutes she sat in the chair trying to get courage to let me apply the forceps. She would resolutely place her hands on the arm of the chair, steady her head in the rest, open her mouth; but just at the critical moment up the hands would go in spite of herself. Beads of perspiration stood on her forehead, and she would say, "I can't, Oh, indeed, I can't!" After several attempts with the same result, I said, "Well, we won't try any more now; we will wait till another day." I sat down by my desk, called her to me, and we had a quiet talk. I explained to her the conditions surrounding the tooth, its relations, to the new one coming, and that its removal would not be very painful. She said, I want it out, and I think I will be brave, but such an awful fear comes over me, I don't know why it is, but I tremble all over." Now, what sort of a man is he who could have any feeling other than tender sympathy for such a child as that?

Before she left the office she came to me and said, "Doctor, I believe I can have it out now, really," and she did. Her will had conquered; kind words, a little time to rest and to think had smoothed her unruly nerves, and she went through the operation beautifully.

The proud child is one whom we wish to treat with considerable deference and respect, as tho he or she were already quite a man or woman. It is best to assume with him that, of course, he is going through all right. He is apt to feel it would be a disgrace if some other child of his own age or younger should endure operations better than he; and so you may appeal strongly to the proud child by a casual mention of the operation you have done for Johnny D. or Mary G., and how quiet and brave they were. Without saying anything he will determine in his own mind not to be outdone by them.

There is also the child who may or may not be proud, but who particularly loves approbation. It pays to give him all the praise he deserves, and possibly a little more to take notice of his possessions and whatever pertaining to himself may be admired. Our appreciation of him and his is the best evidence, in his estimation, that we are worthy of confidence.

On the other hand we find children, as we do adults, who are not particularly intelligent or reasonable; not specially nervous or timid; not proud, and with very little, apparently, of approbativeness in their dispositions. Their ears are dull to argument, they don't care what others have had done, and they don't seem to care what anybody thinks of them; tho this is usually a blind; because to some extent, they do care. But they are *secretive*, and they are *obstinate*. They would appear to be just made up of a great big *I won't*.

In addition to or without this simple obstinacy of character another has a good deal of active combativeness. He has been born belligerent. His first cry was a bugle call to arms; his first hat carried a chip. "He smelleth the battle afar;" expects martial music wherever he goes, and especially with the dentist, whom he instinctively feels is a born adversary.

There are several ways of dealing with the obstinate or the combative child who is more frequently a boy than a girl. One way is to lose one's temper and general self-control. This means failure with a child of any age from six to sixty. One way with the combative child is not to oppose a combative spirit to his. If he seems determined not to let us do what may be necessary; say to him kindly, but firmly, "Very well, I cannot compel you to be a good boy. I am willing to do what I know will be for your good, but it is your interest, not mine, that is concerned; it really makes no difference to me, and it shall be just as you say." Throwing all the responsibility on himself takes him by surprise and turns his thoughts into a new channel. Refusing to have a combat with him throws him "off his base," so to speak. This sort of let-alone policy, especially with the older boys, will often have the effect of sobering them very quickly.

The obstinate child, as before marked, is usually secretive, and you can scarcely tell at times what he really thinks or intends to do. Often, however, he is at heart of a friendly disposition toward those who have once acquired his confidence. With such, especially the smaller ones, it is best to skirmish awhile, till one finds some place favorable for attack. Once penetrate the outer works of their resistence, get a little acquainted ; in other words, approach them on some ground of mutual interest, and they become as faithful friends as one could wish.

It is a doubtful experiment to attempt to control any child by sheer physical force. If a child submits, as he may do after a brief resistance, from a sheer sense of helplessness, it may be only with determination never to enter a dental office again. Unless the case is of extreme emergency, and as a last resort, the exercise of physical control a necessity, I should certainly prefer to let the child go indefinitely, waiting for his own consent to operations.

Moods. Children, like grown people, are subject to moods; they are not always the same. They are different on different days, according to bodily conditions and states of the weather. If conditions seem to be unfavorable; if the child is more than usually nervous; less self-controlled, it is better to let him go home with little or nothing accomplished beyond an examination. Especially is this true of first visits.

Now, I seem to hear objections to all this, that it takes too much time. It is true, primarily it seems a waste of time. We cannot always charge for it, but in the end it will pay, if not in money, certainly in moral influence. But, as to the time, we may avoid loss to some extent, by making short appointments. Appointments for children should always be short—seldom, if ever, more than half an hour, and often less.

I add a few general rules and considerations.

First. With all children we should be strictly truthful, not deceiving them ourselves, not permitting others to do so in our office. Confidence is everything, and cannot be obtained by deception.

Second. Next to truthfulness as to facts, genuine kindliness and friendliness; make them feel that we have their interests at heart.

Third. Treat them more like ladies and gentlemen than it is usual for people to do. Appeal to their sense of manliness and womanliness. Use gentle tones in speaking to them—this has often a wonderful influence, and not alone with children.

Fourth. Remember that *patience is first and last, and has no limit.*

Fifth. We should be exceedingly careful in our manipulations. All nature cries anathema on the man who will needlessly or carelessly torture a child. *It is imperative that we have delicate instruments kept in delicate order, and handle them delicately in the mouths of children.—Dental Review.*

ARTICLE III.

TREATING ROOTS.

DR. LOUIS OTTOFY, CHICAGO.

As a rule, the drilling, reaming, or any other method of enlarging root canals, is pernicious practice, and should be almost entirely abandoned. When a proper entrance to the pulp-chamber has been secured, before any effort has been made to enter the root-canals, the reaming or enlarging of the canal will not be found necessary. Opening into a pulp-chamber and securing an entrance into a root canal should always be done under perfect antiseptic precautions; for this purpose flooding the cavity with a one to two hundred solution of bichloride of mercury is efficacious.

Recently I have followed some interesting experiments conducted by Dr. G. V. Black regarding the antiseptic property of essential oils, and observing the property to be possessed in an extraordinary degree by the oil of cassia, which is very diffusible, I have been led to employ it for this purpose with satisfactory results. In filling the roots of the six anterior upper teeth, difficulties are seldom encountered, except from the occasional small size of the canal in the lateral incisor, which can readily be penetrated by a fine broach, if no foreign substance has been forced into it.

The rule that overhanging ledges should be cut away is inflexible when applied to all the teeth of the mouth, and it may be especially emphasized when the first upper bicuspids are in question; in the treatment of these teeth easy access is invariably necessary. The use of two broaches is good practice: introduce into the canal, which has been found, a large broach (as large a one as can be inserted), and, while leaving it there, endeavor to find another canal by means of a fine, stiff, oiled broach.

The upper first and second molars are often the source of much annoyance, because their canals, especially their posterior buccal, are sometimes difficult to find; frequently the anterior buccal canals are also difficult of approach. It is presumed that free and easy access has been secured. In extreme cases, when the canal cannot be found (generally caused by imperfect light), it is best to arrange for a second sitting; if in the meanwhile some diffusible oil, eucalyptol, for instance, has been sealed into the cavity, it is astonishing how readily a canal is found, whose location it was impossible to determine at the previous sitting. From observing the locality in which many drill, bur, or cut in looking for the entrance to the posterior buccal root-canal, I am led to believe that either our knowledge of dental anatomy is meager, or else we are under the impression that the canals originate from the pulp-chamber very much like the legs of an inverted tripod, from the bottom of the seat, in a triangle, and hence the opening is searched for too near the posterior and buccal portion of the tooth. In making cross-sections of the molar teeth at the point of bifurcation of the canals, a triangle is never found; on the contrary, the tendency is towards a straight line between the palatine and anterior buccal roots. The canal is generally slightly back of a straight line, between these two and a little nearer to the anterior buccal than the palatine.

In filling the roots of any of the lower anterior six teeth, their tendency to bifurcate should be remembered. The use of two broaches is a good practice; one broach will often not readily pass to the apex, but a finer one sometimes follows the first broach at the opening of the tooth, passing into the bifurcated portion of the root, then entering the main channel, and passes beyond the first broach to the apex of the root. This is also often the case with the upper first bicuspids.

In filling the roots of the lower bicuspids, their extreme length should be remembered; aside from that, the canals present nothing unusual; they are accessible and easily filled.

The manner of treating the lower first molar, and the position and form of the root-canals, is perhaps less perfectly understood than that of any other tooth. It is generally described as a two-rooted tooth. Remembering that the pulp-chamber and root-canals have the general outline of the tooth, the supposition that there are but two root-canals is natural. However, we do oftener find three root-canals than two. The canal of the posterior root is the most accessible, wherever the entrance to the cavity; while ready access to the anterior canals, even in badly decayed teeth, must generally be obtained, if by no other labor, at least by the cutting away of some overhanging ledge. It will then be found that whenever the canal is bifurcated the broach will pass most readily into the anterior buccal root-canal, and often the existence of an anterior lingual canal is entirely overlooked. Using three broaches is a good way to determine the location and number of the canals.

This may not be of much consequence when the canals have one common foramen, or when the broach through one of the canals passes to that foramen; but when separate foramina exist—as I have seen them—or when the broach enters the smaller of the two canals, and does not penetrate to the apex, imperfect sealing of it is almost inevitable. In the second molars we do not find this condition, and when access has been secured the filling of the root-canals is not fraught with many unfavorable possibilities.

The roots of the third molars above and below are less often treated and filled; but when this is done, the necessary manipulation proximates nearest to that required for the second molars.

The posts of pivot teeth are entirely too large, especially those of the Logan crown; on paper these posts look well, but if the root is to be cut away sufficiently to accommodate them, there will be either nothing left of it, or at least it will be weakened to a dangerous extent.

In attaching porcelain crowns to the roots of any of the six anterior teeth, whether with or without a band, no unusual difficulties are encountered; but when the first upper bicuspids are to be pivoted, the Dutch biscuit shaped construction of the root should be remembered, and also the fact borne in mind that a post can be permitted to extend only for a short distance into the root. In crowning the lower teeth, when using posts, the flattened shape of the six anterior teeth must be remembered.

For the molars above or below, all-gold caps are better suited, and the use of posts can generally be dispensed with.—*Independent Practitioner.*

ARTICLE IV.

SEPTIC ROOT CANALS.

DR. W. E. TUCKER, BUTLER, MO.

In teeth of this class, pulps have been dead long enough to become gangrenous, or for complete putrefaction to ensue, an abscess, either blind or with a fistulous opening, may have resulted; in either case the preliminary steps in the treatment are just the same. First remove the loose debris, and at least a portion of the decalcified dentine, and, if it is possible, the rubber dam should invariably be applied at this stage. After drying the cavity and saturating it with a disinfectant, cleanse it of decay before entering the pulp-chamber. The importance of suitable disinfectants now presents itself. There are quite a number, but I will only refer to a few. Peroxide of hydrogen is excellent and a great favorite with many, but as it cannot be obtained pure and fresh in many places, it may be dispensed with. Scientific investigation having demonstrated the fact that wherever fermentation and putrefaction exist there are present micro-organisms, it is clear that in the removal of septic matter the dentist needs something that will effectually destroy bacteria, and, if possible, prevent their reformation. I do not see the necessity of using a half-dozen different remedies if one or two will accomplish the desired result. For my part, I like to know which medicine to depend on, and, if I use different kinds in a given case, I would be like the old woman who objected to taking more than one kind of medicine, for in case she should be so fortunate as to get well, she would never know which cured her. For some time I have been using bichloride of mercury almost to the exclusion of anything else, and it has given great satisfaction. It is a very powerful germicide, even when the solution is so weak as not to injure the most delicate tissues of the mouth. To make a suitable solution, which is one part to a thousond, add to 1 ounce of distilled rain water, ½ grain of bichloride of mercury. As the bichloride of mercury decomposes or becomes precipitated, it should be made fresh quite frequently, possibly once a week. Some one has suggested the addition of four or five drops of muriatic acid to the ounce, claiming that it not only increases its power, but also prevents precipitation. Iodoform has been much used in the treatment of the teeth, but it cannot be depended on as a destroyer of microbes, tho it is excellent in preventing their reformation, and hence is useful in combination with chloro-percha for root-filling. Eugenol will be found quite useful as a disinfectant, antiseptic, deodorizer, and obtundent. It is not caustic, but very penetrating.

But to return to our subject of cleansing a tooth of septic matter: The cavity of decay being cleansed, the pulp-chamber should be thoroughly opened and enlarged, but without defacing the natural surface of the pulp-chamber near the entrance to the root-canals; wipe the cavity occasionally with cotton dipt in the bichloride solution. In small roots it is often necessary to enlarge the opening a little, that they may be more easily entered. Now, with a small broach and cotton dipt in the solution, enter the root canal only a short distance, rotate, and remove; wipe the cotton from the broach on tissue or soft white paper, never on a napkin. Take fresh cotton, going a little deeper into the canal each time, and continue the process till you have reached the apex and the canal is cleansed of all septic matter, and all odor of mephitic gas is destroyed. The cotton should now come from the tooth clean and white. Dry with cotton and hot air, and fill as above, immediately. If you cannot succeed in getting the canal perfectly dry, it is evidence of a blind abscess, and I would not fill immediately; but after flooding the canals with the solution, or eugenol, fill the cavity loosely with cotton, and wait a few days, at the close of which time, if the root can be made perfectly dry, the process may be completed without further delay. If peroxide of hydrogen is at hand, it may be used successfully in expelling the pus, by forcing it into the sac; then the root may be filled immediately. Of course, if the root is very sore and the flow of pus very considerable, immediate root-filling is not indicated. Free vent for the pus having been made, leave the cavity open a few days. If the abscess has a fistulous opening and the tooth is not very sore, after cleansing the canals, force the solution freely through the fistula, and fill immediately.

Now all this may seem easy to one just beginning the practice of dentistry. It is true, a large majority of cases are quite simple and easy, but many present themselves that will tax the patience and skill of those of long experience. Sometimes the mouth is small, and the tooth difficult of access; sometimes it seems almost impossible to apply the rubber dam; and sometimes it is difficult to find the entrance to the root-canals, and to cleanse and fill them after being found. Then it will require an extra effort to gain free access to the root, it sometimes being necessary to cut away a considerable portion of the crown. To apply the rubber dam, where the cavity runs below the gum it may be necessary to temporarily fill with gutta percha, being careful not to force it into the pulp chamber, and then make a new opening; or in some cases, to put a gold band around the tooth, and then apply the dam. The short piano-wire reamers are, with me at least, indispensable in finding and reaming out those difficult root-canals. It is almost impossible for them to break, and while it is unsafe to drill into roots, they can with safety be reamed out a little, thereby making the entrance of the canals more easy. A pair of light pliers, such as those belonging to Howe's set of crowning instruments, are often useful in placing these little reamers, which are then to be rotated with the thumb and finger. Now the short broaches, wound with fibers of cotton, are to be used in these difficult canals, remembering that the rotary movement is necessary to remove the contents of a canal. If merely forced into the canal, it will act as a piston and force everything toward the end of the root, instead of entangling the disintegrated nerve tissue in the fibers of cotton.—*Western Journal.*

ARTICLE V.

THE CAREFUL FINISHING OF AMALGAM FILLINGS.

BY GEO. F. CHENEY, D. D. S., ST. JOHNSBURY, VT.

In the January number of the *Archives of Dentistry*, Dr. Harrison of Cadiz, Ohio, reports a case of a molar tooth extracted by him, that had been filled on its posterior surface with amalgam, where the amalgam had been forced up over the cervical wall, between it and the wisdom tooth.

This filling became such an irritant to the surrounding tissues that absorption advanced rapidly, and when operated upon by him the wisdom tooth was destroyed, all the process gone, and a portion of the palate bone considerably absorbed, as well as much injury done to the adjacent first molar.

This case, of course, was mere carelessness, and calls to mind a similar case in my own practice, although not so extensive.

A lady came in asking for an examination of a tooth that was troubling her. Examination revealed pus oozing out from between an upper first and second molar, and by probing it was found that a mass of amalgam had been crowded between the teeth which was very difficult to remove, and upon removal proved to be nearly as large as the half of a silver three cent piece. I cannot account for room for so much to be crowded up there unless a pocket had been previously formed by food, the teeth being quite close.

It is time that some of these cases should be brought up to warn us against such unpardonable carelessness. In nearly every mouth we examine, with any number of amalgam fillings, we see evidences of carelessness in finishing, the gum instead of being healthy is of a bluish color and bleeds upon the slightest touch, and upon examination we very often find the filling over-lapping the cervical edge a thirty-second of an inch and sometimes more. The filling itself, in such cases, is enough of an irritant to keep the gum constantly inflamed, it also leaves a shoulder upon which filth is accumulated.

Too much care cannot be given the finishing of amalgam fillings. I have for the past year or so adjusted the rubber dam for most approximal fillings of amalgam, and I find enough better results can be obtained to justify the extra labor.

In most cases the dam can be adjusted without ligatures by cutting small holes and soaping the rubber on the under side and putting over four or five teeth, this makes the adjustment of the dam comparatively easy.

I work the amalgam into the cavity with bibulous paper, following Dr. Bonwill's instructions, then finish with burnishers as much as possible, and with a piece of floss silk go up between the teeth, forcing the surplus amalgam up against the dam. Clear this surplus out as much as possible, and taking off the dam will remove the remainder.

I then dismiss the patient asking him to come in for another sitting. I finish such fillings with sand-paper disks and strips.

When I cannot make this second engagement I find, by the use of the floss silk between the teeth, these fillings can be very nicely finished without leaving an over lapping mass at the cervical edge or between the teeth.

I have also found a nicely adjusted matrix of very great service and almost indispensable in some cases.

I am convinced that many of the so-called cases of ptyalism are caused by carelessness of the operator and not by the amalgam.

Furthermore, I am satisfied that a carefully inserted and a nicely finished amalgam filling, will preserve teeth as well, and cause as little inflammation of the surrounding tissues, as any other.—*Ohio Journal of Dental Science.*

ARTICLE VI.

IMMEDIATE INSERTION OF AN ARTIFICIAL LOWER JAW AFTER REMOVAL OF THE NATURAL ONE.

A very interesting case is published in the November number *L'Odontologie* of the immediate insertion of a new lower jaw after removal of the old one for necrosis. The patient was a young man, age 21, who was admitted into the hospital at Lyons on 3rd December, 1878, and whose lower jaw, after six years of trouble from a tender tooth—evidently a pulpless one—had become necrosed almost in its entirety. Numerous sinuses formed both inside and outside the mouth, some of them being in the neck—a short distance from the clavicle. The patient acquired mucous rales all over the extent of the lungs, his cough became worse and worse, and he was hourly expected to begin to show symptoms of purulent infection, as the pus, which was poured out in great quantity, was almost all swallowed.

Letievant operated on the 14th December, 1878. This presented no great difficulties. All the body of the bone was lifted out with forceps, leaving the periosteum behind attached to the muscular tissue around. The periosteum had to be artificially stripped off from the ascending rami. On the left side all that was left of the lower jaw bone was the condyle and the coronoid process connected together by a portion of the ascending ramus; on the right side all that was left was the condyle cut off at the level of its neck. After the wound was cleansed, M. Claude Martin inserted into the periosteal gutter a counterfeit lower jaw made of rubber. He had previously taken an impression of the mouth, and made the rubber jaw in its entirety, and simply had to trim it down at the time of the operation.

The lower jaw was attached to an upper palate plate by spiral springs, with swivels, in the ordinary way, and the springs were made sufficiently strong to slightly tend to open the mouth, as the mouth could be closed to some slight extent by muscular action, but, there was nothing to help open the mouth but the springs. In the middle line the rubber jaw was divided with a saw, and the two halves held together by a spring controlled by a button, which allowed of its more easy introduction into the mouth. The fixing of the apparatus only took five minutes. The results of the operation were simple. The apparatus was well borne. After the first day after the operation, the patient ate better than with his diseased jaw. Excepting for a bad attack of erysipelas which came on five days later, and spread over the whole face and hairy scalp, and retarded progress for some time, the patient made an uninterrupted recovery. New bone was laid down from the periosteum beneath and around the rubber jaw; the various movements of the jaw re-established themselves. The rubber jaw was reduced from time to time to allow for deposit of new bone. A new apparatus was at length made to better adapt itself to the new bone; it was made intentionally heavy, and the springs which united it to the palatine plate were set farther forward than usual in order to obtain a propulsion of the lower jaw, forwards and downwards, and to direct the ossification of the chin in those directions. A third was finally made smaller than any of the preceding ones and without springs. The operator remarks that the apparatus might be compared to Meckels' Cartilage, which directs the process of ossification, and in so far as it effects this, its function diminishes, until it disappears altogether as soon as the new bony jaw can go alone in safety.

At the time of the patient leaving the hospital, ordinary sensibility of the skin of the chin had completely returned, whereas it had been for some time very much blunted.

Ten years after the removal of the original jaw there was no contraction of the upper jaw observable.

This gratifying result was attributable to the mechanical action of the artificial jaw, in keeping the parts in a normal state of extension during the healing process, as in the absence of such help there is deformity, caused by contraction after excision of the lower jaw, though in this connection Bryant remarks:—"The amount of regeneration of bone will depend greatly on the state of the periosteum during the removal of the sequestra. If this be healthy, and if new bone have already formed prior to operation, a very perfect reproduction of the portions of jaw removed may take place; in fact, complete reproduction of the whole lower jaw, body, rami, and epiphyses, though in a somewhat rudimentary and imperfect form, may follow its removal for phosphorous necrosis. . . . Should no new bone have formed before the operation, a dense fibroid cicatrical structure will replace the lost bone;" and, again, in another place he says, "When cicatrization is complete, a dense mass of fibrous tissue is formed in the place of the jaw, and comparative little deformity results." But here it is not quite clear whether he means after a total or only a partial excision.—*London Dental Record.*

ARTICLE VII.

CHLOROFORM ADMINISTRATION.

At the distribution of the prizes to the students of the Hyderabad Medical School, by their Royal Highness the Duke and Duchess of Connaught, on January 25th, Surgeon-Major Lawrie, M. D., Principal of the Medical School, in a short address, referred to the commission appointed last year by the Nizam's Government to make experiments with reference to the effects of chloroform. Dr. Lawrie said the experiments which had been carried out by the commission, consisting of Dr. Hehir, Mr. Kelly and Mr. Chamarette, were, in his opinion, the most important that had ever been made, and had conclusively decided a question which had been in dispute ever since chloroform was first introduced. There was no doubt that the anæsthesia produced by chloroform was best measured by its effect on the breathing, and that when the administration was pushed beyond a safe point, the breathing became embarrassed and then stopped. The question in dispute was whether chloroform ever affected the heart directly or not; and this was important in its bearing on the way in which the administration of the anæsthetic should be conducted. The following was the work performed by the commission, as described by Dr. Lawrie, They killed with chloroform 128 full-grown pariah dogs, averaging over twenty pounds weight each. This does not represent a tithe of the experiments they actually performed, which really amounted to several hundreds, as they varied the dose and the method of administering the chloroform in every possible way, and tested the value of artificial respiration in nearly every case by reviving the dogs over and over again after the breathing had stopped, and before the heart ceased beating. What they found was, that no matter in what way it was given, in no case did the heart become dangerously affected by chloroform until after the breathing had stopped. "This," adds Dr. Lawrie, "tallies exactly with my own experience.

I have given chloroform as often, or oftener, than any man living, and have never had a fatal case; and I can state positively that in the 40,000 or 50,000 administrations I have superintended I have never seen the heart injuriously or dangerously affected by it. I take no credit to myself in this matter. I have simply carried out in India the principles Simpson and Syme practised and taught in Edinburgh." In the hospitals attached to their school, chloroform was invariably given with absolute, or, he might almost say, with guaranteed safety, by students, and they were never allowed to examine the heart beforehand, or feel the pulse during its administration. In other places, and in London itself, deaths from chloroform constantly occurred, but provided the administration could swear he examined the heart and felt the pulse, they were always supposed to be accidental. He, Dr. Lawrie, had no doubt deaths would go on occurring until the London schools, which of course influenced the whole world, either entirely changed their principles and ignored the heart in chloroform administration, or else confined themselves exclusively to the use of an anæsthetic like ether, which, with all its disadvantages, they knew how to manage.—*British Medical Journal.*

ARTICLE VIII.

DENTAL INLAYING WITH PORCELAIN.

In continuation of the subject of dental repair by the employment of porcelain inlays as described in the *Dental Cosmos* for July, 1881, it is to be said that there are further details of manipulation in the setting of the circular inlays, which will here be briefly presented.

For preparing the cavity in the tooth, the barrel burs were adopted as being the best instruments at that time obtainable by dentists for whom the operation was described and shown. Since then the writer has had made, by the manufacturing company with which he is connected, a set of nine inlay burs, which have straight, slightly tapering sides, and are fine cut on their ends and sides.

The primary preparation of the cavity may be done with any form of bur at hand for the purpose,—as, for example, a square end fissure bur, and the depth of the cavity be cautiously, yet judiciously determined to be as great as will be compatible with the continued life of the pulp.

The formation of such cavities in natural teeth which have been extracted, and the subsequent grinding of these into sections through the artificial cavity and the pulp-cavity, will afford an experience that will be useful in aiding one to judge how deep the cavities may safely be made in living teeth of like character.

When the primary cavity has been formed and is about to be enlarged by an inlay bur, great care must be taken to hold the engine hand-piece steady to enter the cavity at a proper angle, and to hold the bur so firmly that it cannot run away and mar the cavity margins. Then slowly yet constantly push the inlay bur down to the bottom of the cavity, being very careful not to chip off the edges of the cavity by either too great pushing force or by swerving to one side or the other. It is also necessary that the bur should run quite true in the hand-piece in order that a hole of true and equal taper and also a truly cylindrical hole may be formed.

Failure in any of these points will be made manifest in the finishing process, as this discloses the slightest superficial defects.

The inlay must likewise be ground to a true frustum, and this is a work of more difficulty than might at first be supposed, especially when it is considered that the taper of the inlay is to be made correspondent to the taper of the cavity. With this object in view I have made the grinder-rest here exhibited, consisting of a corundum slab-holder and hand-piece support, which, by set-screw adjustment, enables the operator to rest the nose of the hand-piece on the support at an inclination that will permit the rotating inlay to be held on the slab at such an angle as will impart the desired taper to the walls of the inlay. By this means an inlay can be made of a slightly increased taper in comparison with the inlay bur, and therefore the inlay will touch the cavity all around its superficial border, thus reducing the joining to its lowest degree. The tapers of the cavity and the inlay should, however, coincide as closely as possible, because it will often be necessary to cut down on one side or the other, and that will disclose any increasing separation of the inlay from the cavity.

In still further improvement of the accessories to this operation, brass mandrels have been made, and because they are impervious to the water used in grinding, the shellac will stick the inlays to the mandrels with greater firmness than to the wood points. Two of the mandrels are reversible, and a set of three mandrels serves for the set of four inlays. These have been given such sizes and shapes as were deemed suitable for the meeting of nearly all cases, but if there be an occasion for the conversion of a larger into a smaller size, this may best be done at the laboratory lathe by simultaneously running the engine and holding the revolving inlay again at the rotating lathe-wheel. As another means for rapid grinding, a corundum slab having a suitably tapered perforation may be employed; or the arbor-hole of a corundum wheel may be utilized; but neither of these modes seem on the whole preferable to that previously described. The two most difficult points in the manipulative process are the formation of a truly round and nearly cylindrical cavity, and the grinding of an exactly, corresponding inlay. Another difficulty is the preparation of a permanent cement of a color similar to that of the tooth and inlay. Concerning the permanency of zinc oxyphosphate cements, there is nothing new to be said, and with regard to the permanency of inlays set with this class of cements, there are no recorded data on which to base an estimate of the probabilities of inlay continuance in a given case. The most that can now be said is that some zinc oxyphosphates are enduring in the side cavities in some mouths, and that in nearly every instance its wastage, apart from abrasive or attritional wear, is in lines of concavity, leaving the marginal contact undisturbed. A reasonable inference, therefore, is that the thinner the margin the slower the wastage. Hence it is fair to expect that a very close approximation of the inlay margin to the cavity margin will insure a prolonged duration for the thin intervening septum of connective oxyphosphate. The recent publication of inlay articles has attracted the attention of practitioners who allege the setting of them in zinc plastic cements many years ago, and they can doubtless testify to the more or less staying qualities of the work. On the other hand, it may be confidently anticipated that a class of practitioners will declare that the zinc phosphates are ephemeral in all places in the teeth of all mouths, and that inlay work of that character will be disappointing. That, in fact, it should in no case be advocated, and needs no experimentation to verify its clearly inferential impermanence.

Nevertheless, the experienced dentist will recall cases which (as, for instance, the young lady who had an engagement with some other person than the dentist) he would have been glad to have repaired with an inconspicuous material even though it should certainly be renewed within the year.

It will, however, be conceded that, when the long-expected permanent plastic cement shall have arrived, this inlay process will be deemed an excellent mode of repair, as the samples of inlaid extracted teeth herewith submitted for inspection convincingly attest. No. 1 shows a left superior central having a large labial cavity, and No. 2 a like right central that had a similar cavity, which now has an inlay sat in zinc phosphate. This inlay was made from an old cavity-stopper, and is not so dense as the inlays now furnished, nor is its shade closely similar to that of the tooth;

but the operation is obviously, in some respects, an advance upon anything hitherto brought before the profession, and so far as appearances go it would be difficult to excel the similarly inlaid lower right and left cuspids, Nos. 3 and 4, the latter being readily accepted, as it indeed has been, for a perfectly sound tooth.

The vertical section of a central shows the close fitting of the inlay walls with the cavity walls, even after the surface has been cut down considerably around the margins. It also shows the absence of any cement on the floor of the cavity, and that fact in part explains the close contact of the wall; a very essential element of success in the operation.

The color of the cement modifies the appearance of the inlay, which is more or less translucent, according as its shade is light or dark, and the colour of the cement should therefore harmonize with that of the inlay when that is like that of the tooth; but when, as must frequently occur, the tooth is not exactly matched by the inlay, this may be toned up or down by a suitably-colored cement, such as experience only will enable the dental artist to prepare.

A practically permanent inlay can be made with gutta-percha as a joining medium, and the sample No. 6 shows that a very close wall joint may be made, and the floor also covered, because the mode of manipulating the gutta-percha admits of the complete filling of the cavity.

In practice, the fitted inlay, some preparation of gutta-percha, as Hill's stopping, and the required instruments, are all made hot on a dry water heater, the cavity dried with warm air, the cavity walls thinly lined with the gutta-percha made soft enough to stick to the walls, the inlay put in with a pair of pliers, and quickly pressed home with the hot flat end of an instrument large enough to retain and impart to the warm inlay heat sufficient to completely soften the gutta-percha and cause all the surplus to exude around the inlay. A cold instrument is then immediately substituted for the hot one, and pressure continued until the normal temperature has resulted.

After a short interval to allow the thorough cooling of the gutta-percha, the surface of the inlay may be ground and polished, and the operation finished at that sitting. No. 7 is an example of a small inlay which has been darkened by a bluish shade of gutta-percha, but the joining is a mere line, and the operation is such as would prove permanent and not unsightly in the mouth.

Too great care cannot be taken not to overheat the gutta-percha and so darken it; nor to soil it or the inlay or cavity margins; nor to fail to completely surround the inlay with gutta-percha. Either of these errors will be discovered as a blemish when the polishing process shall be commenced.

No. 8, an upper left lateral in section, shows a close-fitting, yet imperfectly surrounded inlay set in gutta-percha, No. 9 likewise shows one imperfectly set in crude white gutta-percha. No. 10 is an upper right central, having a small inlay set in sandarac, but it, as well as copal and mastic, has a yellow tinge, which is deepened by the melting heat necessary to soften it sufficiently, and hence a darkening of the inlay results.

At the present writing, gutta-percha softened by heat appears to be the best obtainable joining material, all things being duly considered.

The uses of these inlays will not be confined to the circular form cavities previously described, but in many buccal and crown cavities which cannot be given a circular form, the inlay may be approximately conformed, and set in gutta-percha with very satisfactory results.

In large crown and compound cavities where the pulp is nearly exposed the inlays may be set in cement with their bases inward, and so serve as caps to the pulps. In these instances the cement should extend but half-way up the inlay sides, and the remainder of the cavity be filled with gold or amalgam.

Many cases will arise in which, by notching or otherwise grinding an inlay, it may occupy the bulk of a cavity and present a porcelain surface for mastication, thus in a great degree diminishing the otherwise unsightly aspect of a large metal filling.—W. STORER HOW, in *Transactions of American Dental Association.*

Editorial, Etc.

THE DENTAL DEPARTMENT OF IOWA UNIVERSITY.—The legislative investing committee report of affairs in the Iowa state university is a voluminous document, but its ponderousness does not entirely conceal some interesting facts. A synopsis of its general scope has already been made public, and I have obtained an advance copy of that section of the report relating to the dental department which brings to light some interesting facts not heretofore generally known. It reveals some surprising mismanagement—to put it mildly—in the dental department, and while it is a side issue to the main question which led to the appointment of a committee to investigate the university's affairs, it alone justifies the appointment and work of the committee. There is much to be read "between lines" and I am told there has been a good deal of a "circus" going on at Iowa City not yet made public, and that the band is still playing. For the present, however, I will let the committee speak for itself.

This department was organized by the board of regents in 1882 and with the understanding with the dental profession of the state that it should be run without expense to the state until such time as the state should recognize it by making an appropriation for its support.

In 1884 the twentieth general assembly made an appropriation of five hundred dollars to assist in equipping the department with illustrative apparatus, dental chairs and furniture for the lecture room.

This it was claimed by the dental professors was a recognition of their department by the state, and they asked to be fully adopted into the family of the university, with all the rights and privileges of the other departments of the university including the payment of salaries to the professors.

Their prayer was not granted, or at least only conditionally, and the twenty-first general assembly was beseiged for an appropriation to pay salaries. This was denied, however an appropriation of two thousand dollars was made for the further equipment of the department. The professors renewed their petition and asked for the payment of back salaries. The board then formally adopted them, but paid back salaries for two years only. This was the recognition sought to be obtained by an appropriation from the state, and for which the state paid to one of the professors over eight hundred dollars as a lobbyist in addition to his salary as a professor.

For the first two years it was run without expense to the state, and the state is not particularly interested in its management, but since 1884 it has to all intents and purposes been a state institution, and as such we do not hesitate to say its management has been most execrable.

Although the university could have purchased everything needed for its equipment at a discount of from 15 to 25 per cent. from wholesale prices, the professors were allowed to turn over to the university a lot of second-hand instruments and apparatus at full retail prices, although they being connected with the university had bought them at the discount named.

It is but fair to state, however, that Professors Ingersoll and Wilson claim to have objected to this method of speculating.

Professor Hunt seems to have had, except the last year, the entire management of the finances of the department. He has purchased supplies and collected the fees. He has kept the supplies for the department in his own office and borrowed from them when out of material and at the same time run a sort of supply department for the students. He has banked university money with his own bank account—he has been secretary, treasurer, book-keeper, and general manager and as such has had entire charge and control of all the books and papers of the department.

For these things he has been severely criticised by his colleagues, and by implication at least charged with appropriating department material and funds to his own account. We are of the opinion that Dr. Hunt is not the only one deserving of censure, the other members of the faculty and board of regents were to blame for permitting this condition of things to exist at all.

Dr. Hunt presented his books and vouchers for our inspection and we found no evidence of anything wrong with them except that they were meager and failed to make a complete exhibit of the affairs of the departments. Neither did his colleagues, Professors Ingersoll and Wilson; although they evidently expected so to do, disclose any discrepancies.

During the last session the board of regents assumed the entire financial management of the department and the clinical receipts more than doubled those of the last session previous proving to us conclusively that while there may not have been any diversion of funds there must have been great mismanagement. But our criticism does not end here, for we find that by a recent action of the board Professors Ingersoll and Wilson, against whom no breath of suspicion has been raised, no word of complaint entered, have been removed from the faculty, while Professor Hunt, who has at least the smell of fire upon his garments, has been retained and advanced to the position of dean of the faculty, and this in the full light of the developments of this investigation, and in the face of a series of resolutions signed by one-half of the junior members of the last class declaring that he had been neglectful of his duties to the department and asking for his removal. We are credibly informed that but few of the sixteen students signing these resolutions have returned this year. When we consider these facts the action of the board is unaccountable. They may have good and sufficient reasons for their action, but they have not seen fit to make them known.

Since appointed to our present duty we have made a careful study of the university and we believe we have a very fair understanding of its needs, and we cannot conceive of any exigency which would make it necessary to remove two such men as Professors Ingersoll and Wilson and retain Professor Hunt for the good of the university.

We are told that the department is prosperous, having more students in attendance this session than ever before. We are glad to know of its prosperity, but to our minds it only proves the popular demand for such instruction, and that the department can prosper in spite of its mismanagement.—*Burlington Hawkeye.*

THE INTERNATIONAL TOOTH CROWN COMPANY VERSUS THE DENTISTS OF THE UNITED STATES.—What is the International Tooth Crown Company? What is it doing? It is a corporation not composed of dentists, but whose stockholders and active officers are parties recently connected with the Goodyear Dental Vulcanite Company, who for many years waged war on the individual dentists throughout the country; and its demands and *methods of operation* are very similar to those pursued by the old Goodyear Dental Vulcanite Company. There is this difference, however: the International Tooth Crown Company does not confine itself to any *one* patent, but is on the lookout for letters patent relating to dentistry when taken out by any person in the United States. It purchases such patents when practicable and then makes moneyed demands against dentists under them; and, if not submitted to, harasses them by suits in the United States Courts. It has recently, if we are correctly informed, added two new patents on removable bridges to its list.

These of the profession who consent to pay the royalty demanded are compelled to sign a license full of offensive agreements, and which is little less than a species of blackmail to say the least, or take the alternative of an expensive lawsuit.

The principal patents now owned by the International Tooth Crown Company are several patents known as tooth crown patents, which cover practically most of the successful operations in tooth crowning in use by our profession, and patents relating to bridge work, the principal one of these being the Low patent, under which they practically claim all bridge work.

The International Tooth Crown Company has suits now pending against members of our profession in the States of Maryland, New York, Connecticut and Wisconsin, and are about to commence suit in other States, or are threatening to do so.

A Connecticut and New York case was heard over two years ago, in which a voluminous record was made up on behalf of the complainants and defendants. Upon that record as made, the patent on bridge work was sustained, and an injunction issued against the defendant dentists. The bill, however, was dismissed as to the several patents on crown work, and an appeal was taken by the complainant, the International Tooth Crown Company, to the Supreme Court of the United States, where such patents are now pending.

To our personal knowledge the International Tooth Crown Company claims that the tooth crown patents will be unqualifiedly sustained in the coming trial before the Supreme Court of the United States, and that every member of our profession who has done tooth crown work will be subjected to litigation, put under injunction, and compelled to pay costs, damages and profits for infringement of these patents; and by reason of the voluminous and confused record on the part of the defendants in that case, there is great danger that this will be the result.

Our present annoyances from litigation are the claims of the Company on bridge work under the Low patent. The greatest danger, however, is that we will remain idle until the Supreme Court's decision on what are known as crown patents; then, if the decision is in favor of the Company's patents, as we anticipate, we will not be ready to meet them.

Now for the remedy. The only way to meet this problem is to get ready beforehand for the worst, viz.: the sustainment of these crown patents by the U. S. Supreme Court.

The profession should be in such shape that any member, however humble or obscure, or however remote from the large centers he may live, can step forward in any court, on short notice, with full and complete testimony to defeat these tooth crown patents, irrespective of and additional to any evidence presented in the case now pending in the U. S. Supreme Court.

To accomplish this single-handed and alone will involve the dentists in endless expense and trouble, and probably result in victory for the Company. *Concerted action is imperatively needed.*

With this end in view, at the earnest solicitation of many prominent members of the profession, "THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES" has been formed. Its object is to contest, in a lawful and equitable manner, the patents of this Company or any other patents relating to dentistry, where the validity of such patent has not been fully established. After competent legal advice it was incorporated. This was accomplished under the name above set forth, and the undersigned consented to act as the first Board of Directors. The number of Directors was fixed at three, as it will be obvious to all that the work of such an organization to be prosecuted successfully must be in the hands of a small number, not widely separated, so that there may be concerted action without delay.

By-Laws have been adopted, a copy of which we will forward to you.

THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES proposes to take charge of *all* suits commenced by the Company against any of its members *who unite themselves with this Association before such suits are commenced.*

And we state *unhesitatingly* and *advisedly* that with the evidence we now have in our possession and procurable, we will be able to defeat this Company in their suits against any member of the PROTECTIVE ASSOCIATION on a claim of either bridge or crown patents.

In order to do this we must have funds to engage the best legal talent, and to collect all the required evidence and place it in a form to be used in any part of the country. We therefore ask a general response from the profession. The membership fee is only $10.00, which will entitle the member to protection against this Company, or against any unjust prosecution on doubtful patents relating to dentistry.

The names of the members will not be made public.

We beg the hearty co-operation of every dentist in this movement. The benefits will be shared by all, while the work must mainly devolve upon a few. Dentists can greatly aid the Directors by *responding promptly*, and by inducing those whom this circular may not reach to join the Association. *Do not lay this upon the shelf until you have mailed your reply enclosing* $10.00.

We further desire any one having evidence, relating to either crown or bridge work, which evidence relates to crown and bridge work done before the year 1881, to send to us a detailed description of such work, enclosing a drawing and sketch of the work when completed, if possible, no matter how roughly such sketch may be made, and giving the name of the party for whom such work was made, and for how long a time used.

Please sign the enclosed By-Laws, and send name and address, *plainly written*, with membership fee, to J. N. CROUSE, Chairman, Board of Directors of the DENTAL PROTECTIVE ASSOCIATION, 2231 Prairie Avenue, Chicago, Ill., who will forward you a receipt.

LYMAN J. GAGE, Vice-President of the First National Bank of Chicago, has kindly consented to act as Treasurer for the Association.

J. N. CROUSE,
T. W. BROPHY, } BOARD OF DIRECTORS.
E. D. SWAIN,

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P. S.—To avoid unnecessary confusion and delay, *all communications should be sent to*

J. N. CROUSE, 2231 Prairie Avenue, Chicago, Ill.

CHICAGO, March 4, 1889.

Bibliographical.

HARRIS' PRINCIPLES AND PRACTICE OF DENTISTRY.—*Twelfth Edition. Revised and Edited by Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., 1889.*—This twelfth edition of our Standard Harris is as large as a city directory. It contains 1086 illustrations, and 1222 pages, including a complete index. It comes from the well-known press of P. Blakiston, Son & Co., of Philadelphia, and we need not add the workmanship, in the way of printing, binding, etc., is in keeping with the character of this well-known house.

What would "American Dentistry" be to-day if there never had been a " Harris' Principles and Practice?"

Where is there a dentist in this country, now practicing, who has not poured over the pages of Harris ?

How well we remember the early edition, which was handed to us some thirty years ago by our dear old preceptor, on the day upon which we entered his office as a student of dentistry. What a wonderful book it seemed to us then, with its anatomy, pathology, therapeutics, surgery and mechanics.

It *was* a wonderful book, and this new edition of 1889 *is* a wonderful book.

The complete picture of the *science* and *art* of dentistry was displayed in the old edition, and just as fully in the new edition, and it has taken some seven hundred more pages to present the picture of to-day.

Professor Gorgas has proved himself eminently fitted for this work, and seems not to have omitted a single point in any department of the science or art of this active specialty of medicine, recognized by the profession this year in this edition. It seems to be really a complete exposition of dentistry. We find, for instance, in the discussion of the causes of dental caries, the late experiments of Dr. W. D. Miller, of Berlin, and the doctrines of Dr. Geo. Watt. In Pathology, we find references to the work of Dr. G. V. Black. In orthodontia, all the favorite methods of our most prominent operators are illustrated.

In "Operative Dentistry," the beginner can get from this edition all that it is possible to obtain from description of methods, and the old operator can get a review of the methods of famous operators. Crown and Bridge Work is as fully illustrated in this volume as it has been in any work specially devoted to this one subject. In "Mechanics, or Dental Prosthesis," everything that we can think of, from how to make a spiral spring, to the method of constructing an aluminum cast plate, and from a bench vise to a Knapp nitrous oxide combination blow-pipe, seems to be fully represented by descriptions and illustrations. It is a wonderful book! A whole dental library in itself! An indispensable book! A complete system of "dentistry!" It is a "Webster's Unabridged," and should lie within handy reach of every dentist and every dental student in the world.—*Cincinnati Medical Journal.* C. M. W.

Monthly Summary.

WHAT SHALL WE EAT?—When I examine the teeth of those who live in the cold regions, as the Esquimaux, who live entirely on a fatty diet, I find them of good character and structure; and as I pass to other regions, where the people live entirely on a vegetable and a fruit diet, I find their teeth of the same general character as those of the meat and fat eaters. Also, when we examine the teeth of the early races of this continent, or in any quarter of the globe, we find the same character of teeth associated with the greatest variety of food habit. The question arises whether a meat diet or a vegetable diet is best for the human race. I hold that we may eat almost any form of food, but that we are not built for a meat diet. This is my positive conviction. I know it is contrary to general opinion, and the shape of the teeth, especially of the canines, is cited in opposition to it. It is a fact that the human animal has comparatively smaller teeth than many of the herbiverous animals; that does not indicate a meat diet. We now live on a mixt diet, but I think the time will come when the human race will refuse to eat anything that "has just died," as Dr. Atkinson puts it. To my mind the whole human race is gradually advancing from a coarse stage of existence, from a time when the flora and fauna on the earth's surface were rude and coarse. Yet that is an expression which we cannot properly use in this connection, because there is nothing coarse or fine in nature, but still there is a difference in the grain, not only in organized beings, but in vegetables that then existed; they were coarser in grain and coarser of organization than those of the present, and probably those of the future; and the reason, I think, lies in the fact that the food of those animals and vegetables was in a comparatively coarse and crude condition. The earth has been going through a refining process, as it were, and we find a different race of animals and a different race of men; and this change will go on till that condition comes when the earth will be peopled by a race of men and women who will not only not eat meat, but will probably be so spiritually improved by the better food taken into their systems that they will be an entirely different race from that which now exists. I believe that all nature points to that result. I believe that not only this earth, but the great series of worlds, every one of which is, or will be, peopled similarly to ours, must eternally advance toward the good in the refinement and elevation of the races which exist on them. —*Dr. James Truman, Philadelphia.*

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"	Henry C. Jones	Va
"	W. S. Carruthers	Texas
"	Daniel McFarlan	D. C
"	A. G. Bouton	Ga
"	Thomas H. Davy	Md
"	B. H. Teague	S. C
"	Wm. B. Wise	Va
"	S. Dwight Hodge	Vt
"	C. P. Baird	Tenn

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry—the Record Books showing to the credit of many of them hundreds of gold fillings inserted for Infirmary patients, besides other operations. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge,**) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or **Winter** Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular** or **Winter Session** will begin on the 1st day of October, 1887, and will terminate about the 1st of March, 1888.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

F. J. S. GORGAS, M. D., D. D. S.
Dean of the Dental Department of the University of Maryland.
845 N. EUTAW STREET, BALTIMORE, MD.

Baltimore College of Dental Surgery.

DENTAL INFIRMARY
BALTIMORE COLLEGE OF DENTAL SURGERY
EUTAW ST

This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects, especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations

The Baltimore College of Dental Surgery,

CHARTERED BY THE LEGISLATURE OF MARYLAND IN 1839.

The Oldest Dental College in the World.

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RICHARD B. WINDER, M. D., D. D. S.,
Professor of Dental Surgery and Operative Dentistry.

M. WHILLDIN FOSTER, M. D., D. D. S.,
Professor of Therapeutics and Pathology.

WM. B. FINNEY, D. D. S.,
Lecturer on Dental Mechanism and Metallurgy.

B. HOLLY SMITH, M. D., D. D. S.
Lecturer on Special Anatomy and Dental Materia Medica.

THOMAS S. LATIMER, M. D., Professor of Physiology.
JAMES E. LINDSAY, M. D., Professor of Chemistry.
CHARLES F. BEVAN, M. D., Professor of Anatomy.
OSCAR J. COSKERY, M. D., Clinical Professor of Oral Surgery.
RICHARD GUNDRY, M. D., Professor of Materia Medica.

CLINICAL INSTRUCTORS.

CORYDON PALMER, D. D. S.	Ohio	J. HALL MOORE, M. D.	Va
E. PARMLY BROWN, D. D. S.	N. Y	JOHN ALLEN, D. D	N. Y
A. L. NORTHROP, D. D. S.	N. Y	R. B. DONALDSON, D. D. S.	D. C
CHAS. R. BUTLER, D. D. S.	Ohio	JOHN MEYER, D. D. S.	N. Y
E. L. HUNTER, D. D. S.	N. C	H. A. PARR, D. D. S.	N. Y
W. W. WALKER, D. D. S.	N. Y	J. EMORY SCOTT, D. D. S.	Md
T. S. WATERS, D. D. S	Md	E. R. RUST, D. D. S.	D. C
DAVID GENESE, D. D. S.	Md	C. L. ALEXANDER, D. D. S.	N. C

DEMONSTRATORS.

R. B. WINDER, JR., PHAR. G., D. D. S., Demonstrator of Operative Dentistry.
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Assistant Demonstrators.

GEORGE G. HARDY, D. D. S J. W. SMITH, D. D. S. J. E. ORRISON, D. D. S.
W. W. DUMBRACCO, D. D. S. G. MARSHALL SMITH, D.D.S. C. S. SEIBOLD, D. D. S.
J. W. CHAMBERS, M. D., Demonstrator of Anatomy.
J. H. BRANHAM, M. D., Assistant Demonstrator of Anatomy.

The Forty-Ninth Annual Session will commence on the 1st of October, 1888, and continue until March, 1889. The Infirmary is open during the entire year for Dental operations.

Students corresponding with the Dean will please be careful to give full address, and direct their letters to

PROF. R. B. WINDER, DEAN,
No. 716 PARK AVENUE, BALTIMORE, MD.

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$2.00 per 100 Gallons.

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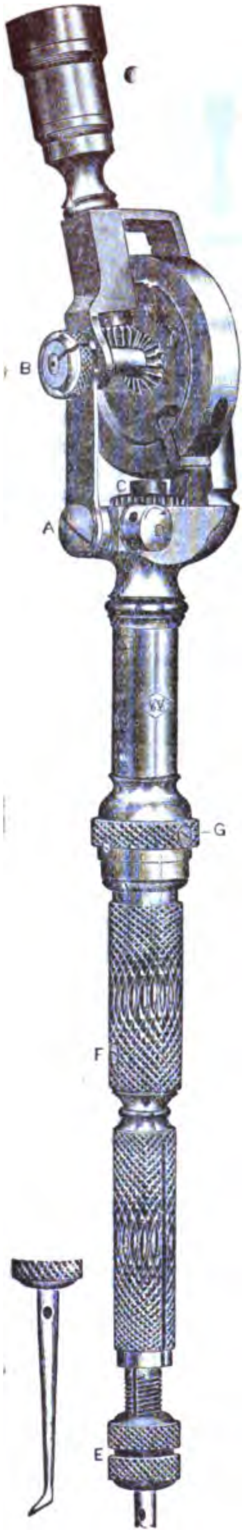


THE BONWILL

—IMPROVED—

MECHANICAL MALLET

FOR SOCKET-POINTS.

Invented by Dr. W. G. A. Bonwill.

In this mallet the blow is delivered by a revolving hammer, a metal wheel with a steel plate let into its rim, and projecting sufficiently to strike the head of the plunger at each revolution of the wheel. The other end of the plunger is hollow, and split in three sections, for the reception of the plugging point. It will hold securely the Snow & Lewis, Cone-Socket, or Engine-bits.

The rapidity of the blows is only limited by the speed at which the engine is run. The force of the blow can be varied by running the engine faster or slower, or by greater or less pressure on the plugging point, or by squeezing the split portion of the case. As sent out, the Mallets are properly adjusted for use, and on no account must the hammer projection be disturbed. All the adjustment necessary is to be accomplished by turning the adjuster. This revolves a worm-gear, which moves very slowly, permitting an adjustment as close as the thousandth part of an inch. No change ought to be necessary except from wear.

The Mallet is held in the hand like a pen or pencil, with the two first fingers resting upon the squeeze-nut, and the thumb against the milled portion of the case. This manner of holding it gives complete control of the working of the Mallet. The blows may be intermitted temporarily without stopping the engine, as in picking up and placing the gold, by simply extending the fingers, thus removing the end of the plunger from contact with the hammer; or the blows may be made almost continuous, by flexing the fingers; or the plugging-point may be turned and directed by a movement of the thumb and fingers.

The milled portion of the case is swiveled at G, to permit change in the position of the plugging-point.

We can supply the Bonwill Mechanical Mallet with attachments for the No. 4, No. 6, No. 7, or H. & W. Handpieces, for the Slip-Joint Connection, and for the Bonwill Engine. The illustration shows the Slip-Joint Connection.

Directions for use with each Mallet.

Price $15 00

In ordering, be sure to indicate which attachment is wanted.

THE S. S. WHITE DENTAL MFG. CO.

Philadelphia. New York. Boston. Chicago. Brooklyn.

THE ABBOTT AUTOMATIC PLUGGER.

Invented by Dr. Frank Abbott.

The Abbott Automatic Mallet was designed specially to avoid the defects of other appliances of its class. It is simple in construction and combines with the usual direct blow a back-action movement, actuated by the same mechanism, so that with it gold can be packed into cavities in almost any position in the mouth.

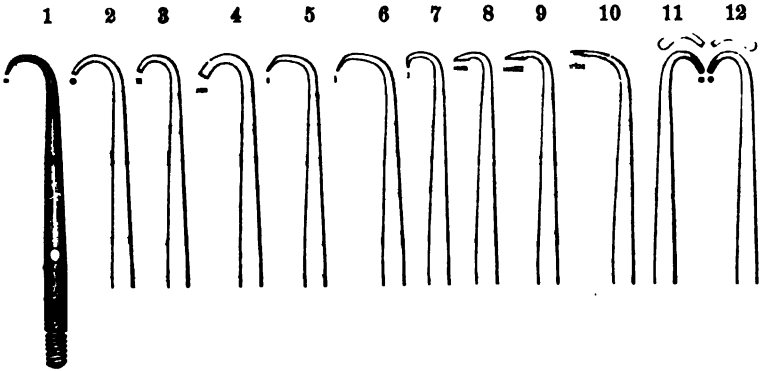
The working parts—pivotal latch, tripping mechanism, hammer, and spring—are entirely free from the case, being carried upon a spindle which passes centrally through it. This plan of construction avoids friction. Each end of the spindle is socketed for the reception of the plugger points, one end giving the direct push or thrust-blow, the other the pull or back-blow.

The Mallet combines simplicity of construction with easy, effective operation.

All the parts liable to wear are made of hardened steel, and the instrument throughout is made in the best manner.

For the direct blow the Cone Socket, or Snow & Lewis points, either of which will fit the socket, may be used. For the back-action blow, Dr. Abbott has devised the set of points shown herewith. It is believed they will cover all requirements.

PRICE, NICKEL PLATED, ... $9.00



PRICES.

Nos. 1 to 7 inclusive	each	$0.40
" 8 to 12 "	"	.50
Set of 12 Points		5.25

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Extra Dry (Gold & Platina) Alloy, Improved Amalgam, &c.

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We beg leave to call the attention of the Dental profession to the fact that our business was established in 1849, and has been strictly confined to purifying and hammering metals. With this experience we feel justified in asserting that any article we put upon the market should certainly have the merit which we claim for the above articles of manufacture.

We claim for our foil that it is made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made *cheap*.

Our Extra Dry Alloy and Improved Amalgam are composed of entirely pure metals, fused and mixed with the greatest care consistent with a view to produce the general effect to be desired in all Amalgams. They contain no *Cadmium* or *Zinc*.

We will cheerfully extend every facility to anyone desiring to test them to their fullest capacity, and most respectfully invite a trial.

These fillings can be obtained at any first-class Dental depot, or directly rom our house at the following rates:

Soft and Cohesive Foil	$30 00	per oz.
" " " "	15 00	" ½ "
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Eureka Gold Filling at same rates

Extra Dry Alloy	$4 00	per oz.
" " "	2 00	" ½ "
Improved Amalgam	2 50	per oz.

All goods can be returned if not as represented.

FOR SALE BY SNOWDEN & COWMAN

TO THE DENTAL PROFESSION.

For ten years past the Welch name has been familiar to you. It was in the year 1879 that father and son under the firm-name of T. B. Welch & Son started the dental depot business in a very modest way at Vineland, N. J., placing on the market as their leading specialty their now celebrated Gold and Platina Alloy. By conscientious attention to business and considerate care of the interests of their patrons, their business made wonderful growth, developing in fact beyond control of their own capital. In the year 1886 they increased their business facilities by associating other capitalists with them under the name of Welch Dental Company. These were the stockholders of The Wilmington Dental Manufacturing Company of Wilmington, Delaware; and, those who have had business relations with both the Welch Dental Company and The Wilmington Dental Manufacturing Company, have probably noticed that Dr. J. F. Frantz was President of both corporations.

It has been deemed prudent and advisable to now consolidate the interests of the two companies under one corporate name and management. As The Wilmington Dental Manufacturing Company has the larger charter privileges, the consolidation is effected under the latter title, tho unfortunately the longer name, and the Welch Dental Company becomes a house of the past. Not so to the Welch name, we would have all our readers understand. The actual interests of the Doctors Welch remain the same as under the administration just about to sacrifice its legal existence. The venerable and highly respected Dr. T. B. Welch will continue to fill the editorial chair of our ITEMS as in the past, and the filling-materials that have obtained a world-wide reputation for excellence will receive the personal manipulation of the Doctors Welch as heretofore.

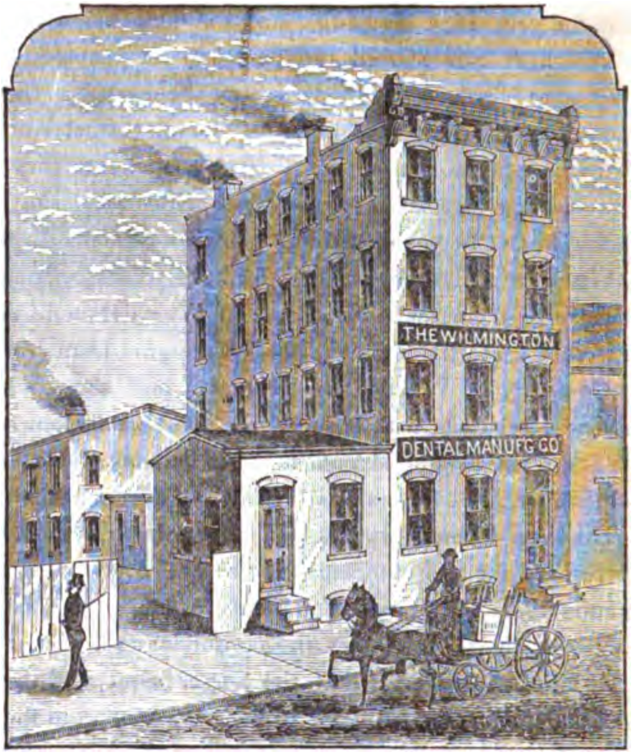
The Wilmington Dental M'f'g. Co.

1413 Filbert Street, Philadelphia, Pa.

The Wilmington Dental Manufac'ng Co.

MANUFACTURERS OF SUPERIOR

ARTIFICIAL TEETH.



Nos. 1010 AND 1012 KING STREET,

WILMINGTON, DELAWARE.

Having been fully recognized as producing a ***Superior Tooth*** at a very moderate ***price,*** now further avail themselves of this medium through which to call the attention of the Dental Profession to their manufacture. They have now brought the character of their ***moulds*** to a legitimate form in design and construction, and the ***shades*** of their teeth to that variety which affords the Dentist the opportunity of approaching the ***natural enamel.*** A very critical examination is solicited as to price and quality. Send for price-list.

For Sale by Dental Dealers Everywhere.

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We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, -	$2.00

ARTICULATORS

From - - - -	$1.00 to $4.00 each.

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - -	each .40

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - -	$1.25
Hood & Reynold's 0, 1, 2, 3, per pound, - -	1,25

GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ouuce, - -	$4.00
Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	
Caulk's Diamond Pellets, per ounce, - - - -	$4.00
Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - -	.50

DR. T. O. OLIVER'S GUTTA-PERCHA.

Per ounce, - - -	$4.00
Put up in 1, ½, 1-4, 1-10, 1-20 ounce packages. 18	

Painless Dentistry.

Please note the following Testimonials, which are a sample of hundreds received from every part of the United States.

Dr. E. M. Warne, Waltham, Mass.—Your Anæsthetic does all you claim it will do.

Dr. A. H. Lee, Washington, D. C.—Your Anæsthetic is a wonderful article, and in my hands has proven a success.

Dr. J. E. Breeding, San Diego, Cal.—I use your Anæsthetic daily, and with perfect success.

Dr. H. C. Morrison, Morristown, O.—My patients express themselves much pleased with your Anæsthetic.

Dr. A. H. Chandler, Sturgeon Bay, Wis.—I find your "Local Anæsthetic" all you claim it to be.

Dr. Thos. M. Talbott, Washington, D. C.—I have tried your Anæsthetic until I am satisfied it will do all you claim for it.

DIRECTIONS.—Dry the gums thoroughly, then apply the "Anaesthetic" to the gums around the tooth with a pledget of cotton; let it remain for one minute, then instantly remove the tooth

A 2-Oz. Bottle of Dr. E. T. Barr's "LOCAL ANÆSTHETIC" sent prepaid for $1.00, and guaranteed to make Tooth Extracting painless, or money refunded, by Dr. E. T BARR, Manufacturer and Proprietor, Bowling Green, Ky.

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ESTABLISHED 1856.

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MANUFACTURERS OF
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AND DEALERS IN
DENTISTS' MATERIALS,
No. 9 W. Fayette St., between Charles & Liberty Sts
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	Per oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,	$32.00	$16.00	$8.00	$4.00
Valleau's	30.00	15.00	7.50	4.00
Ney & Co's.	30.00	15.00	7.50	4.00
S. S. White's, ½ Century,	30.00	15.00	7.50	4.00
" " Globe,	30.00	15.00	7.50	4.00
" " 1000 Fine,	30.00	15.00	7.50	4.00
R. S. Williams, Cylinders, A, " " " B, " " Rect. Pellets, " " Standard,	30.00	15.00	8.00	4.00
Watt's Crystal,	32.00	16.00	8.00	4.00
E. Rowan & Co.	29.00	15.00	3 20 per 1-16 oz.	
" " untrimmed,			5.60 per 1-5 oz.	
" " "			2.90 per 1-10 oz.	

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Ney & Co's—Nos. 4, 6, 8, and 10, - - 40 Cents per Book.
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" " Nos. 4, 6, 8 & 10, (extra tough) 40 " " "

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We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR PRICES.

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	GUM.	PLAIN.
RETAIL PRICE.	15 Cts.	10 Cts.
For $15 00 net Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

H. D. JUSTI'S.

	GUM.	PLAIN.
RETAIL PRICE,	15 Cts.	10 Cts.
For $15 00 Cash,	14 "	9½ "
" 25 00 "	13 "	9 "
" 50 00 "	12½ "	8½ "
" 100 00 "	12 "	8 "

We also keep in Stock a *full* assortment of *Block Teeth* of the following makes, viz:

Gideon Sibley's

—AND—

The Wilmington Dental Manfacturing Co.

Price per. set of 14,	$ 1 00
" 11 " "	10 00
" 29 " "	25 00
" 60 " "	50 00
" 92 " "	75 00
" 125 " "	100 00

Less than 14 Teeth, 8 cents per Tooth.

SNOWDEN & COWMAN,

DENTAL DEPOT,

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GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
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Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

THE
Gold and Platina Alloy
Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

THE
Gold and Platina Alloy
Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
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MANUFACTURED
—BY—

Chicago Dental Manufacturing Co.

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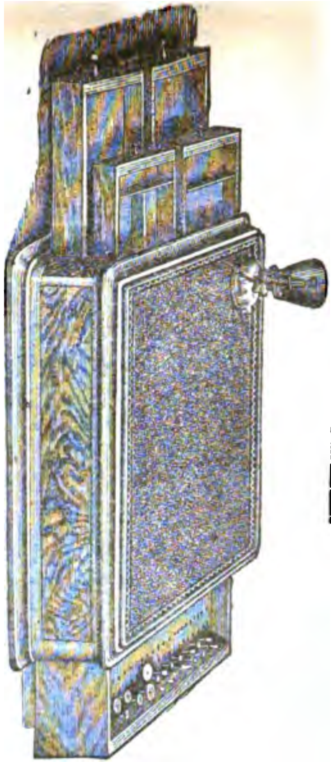
FOR SALE BY SNOWDEN & COWMAN
9 W. FAYETTE STREET, Baltimore, Md.

ALLAN TABLE.

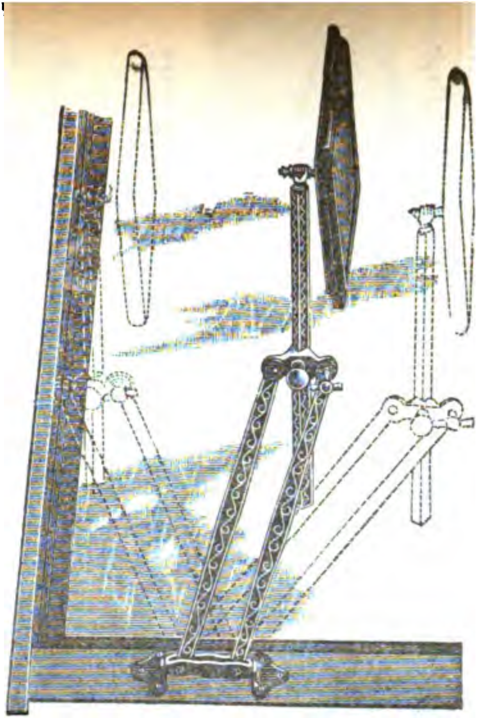


VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

Lamp and Shield, $0.70

STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

Trade Supplied. SAML. A. CROCKER & CO.

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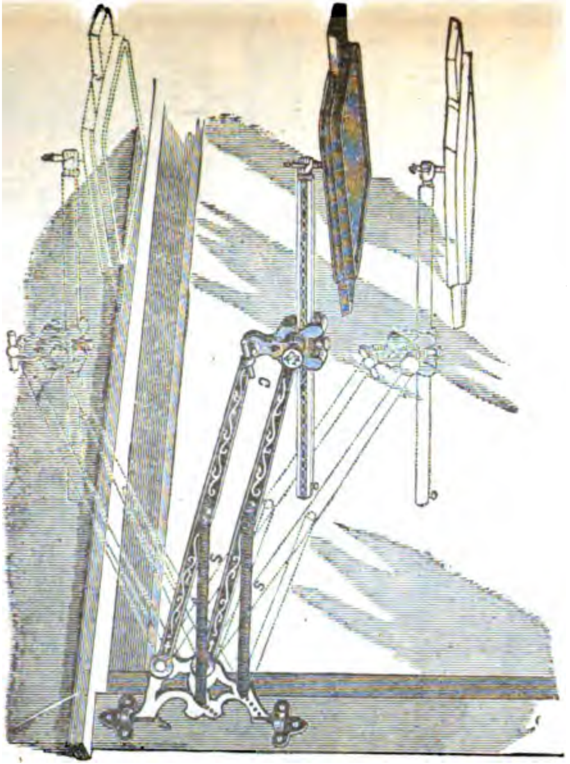

This is the most convenient Bracket made. All metal parts Nickel Plated. Bar Slides between four rollers. C, the Clamp, can be regulated for any load. The Allan Table works fine on this Bracket.

PRICE WITH SMALL TABLE, - - - - -	**$22.50.**
" " Veneered Allan Table, - - -	**29.00.**
" " Glass Sides, Allan Table, - -	**32.00.**

GOLD AND PLATINA ALLOY

Price, $4.00 per oz. Troy.

THE
Gold and Platina Alloy
Will neither Shrink nor Corrode.

THE
Gold and Platina Alloy
Gives the Best Satisfaction.

TO INSURE GOOD RESULTS USE THE BEST MATERIAL.

THE
Gold and Platina Alloy
Is universally recognized as being superior to all.

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Makes the next best Filling to Gold.

Put up in ¼, ½ and 1 oz. p'k'gs. Each package warranted as represented.

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Is free from Dirt or Dust.

THE
Gold and Platina Alloy
Requires no Washing.

FOR SALE
AT ALL DEPOTS.

MANUFACTURED
—BY—

Chicago Dental Manufacturing Co.

CHICAGO.

For Sale by SNOWDEN & COWMAN
9 W. Fayette Street, Baltimore, Md.

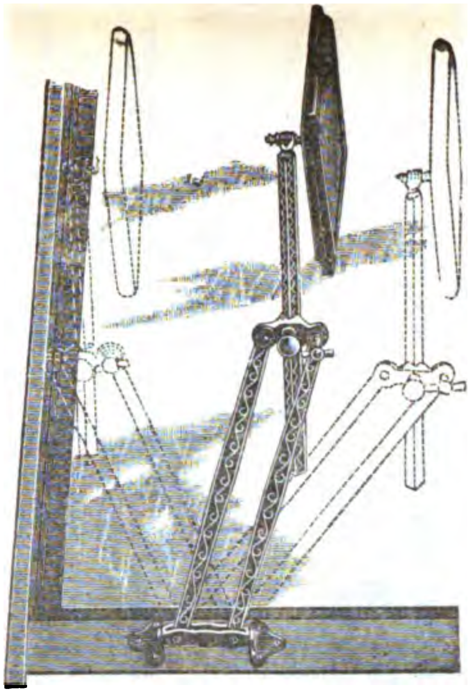
ALLAN TABLE.

VENEERED SIDES, - - $9.00

BEVELED GLASS SIDES, $12.00

Lamp and Shield, $0.70

STUDENT BRACKET.



This is the best Bracket in the market for the money. Japanned Arms. Nickel Plated Bar Slides in and out. Black Walnut Table with two drawers.

PRICE, - - - $10.

With Allan Table, - $17. Glass Sides, - $20.

Trade Supplied. ***SAML. A. CROCKER & CO.***

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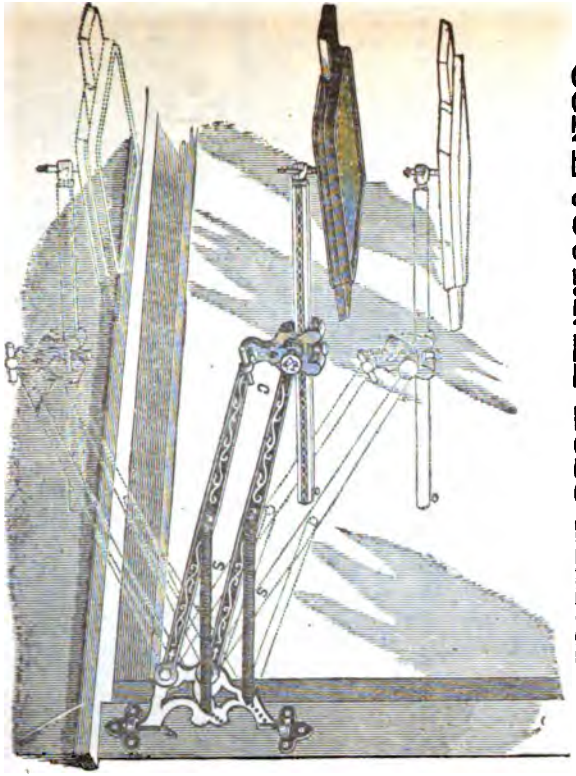
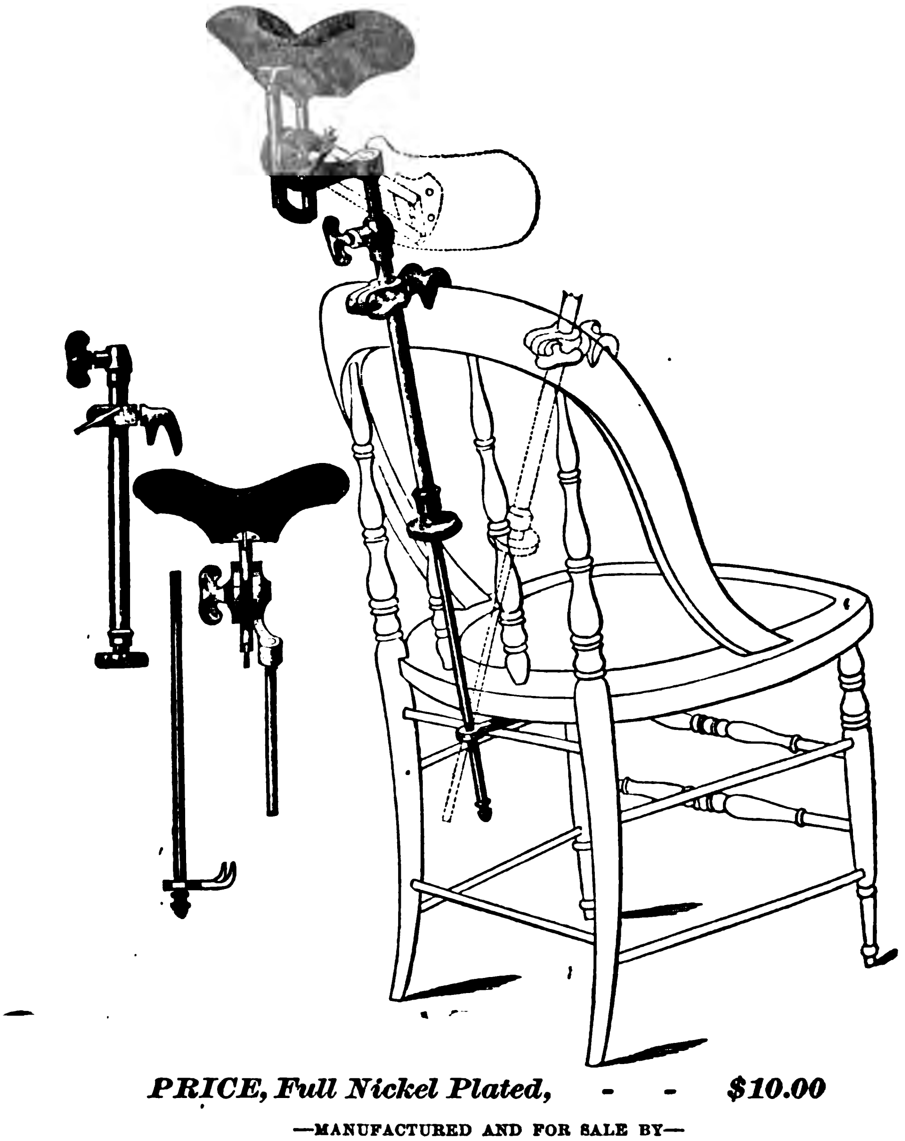


This is the most convenient Bracket made. All metal parts Nickel Plated. Bar Slides between four rollers. C, the Clamp, can be regulated for any load. The Allan Table works fine on this Bracket.

PRICE WITH	SMALL TABLE, - - - - -	$22.50.
" "	Veneered Allan Table, - - -	29.00.
" "	Glass Sides, Allan Table, - -	32.00.

SNOWDEN & COWMAN'S
—NEW—
Portable Head-Rest,



PRICE, Full Nickel Plated,* - - *$10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN,

20 West Fayette Street, Baltimore, Md.

SIX WORLD'S FAIR MEDALS

OF THE

HIGHEST ORDER OF MERIT

AWARDED FOR SUPERIORITY

—AT—

VIENNA, CHILI, PHILADELPHIA, PARIS, SYDNEY, MELBOURNE,

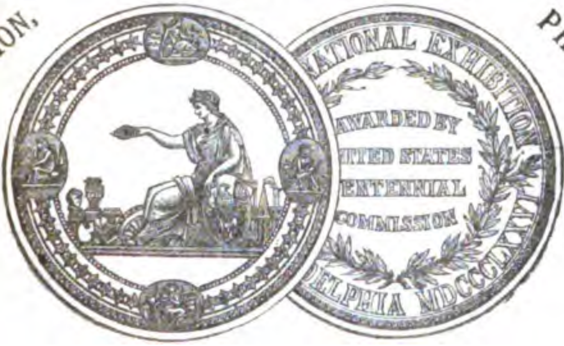
VIENNA, 1873.

—TO—

H. D. JUSTI,

IN COMPETITION
WITH THE BEST MAKERS
—OF—

PORCELAIN TEETH.



CENTENNIAL EXHIBITION, PHILADELPHIA, 1876.

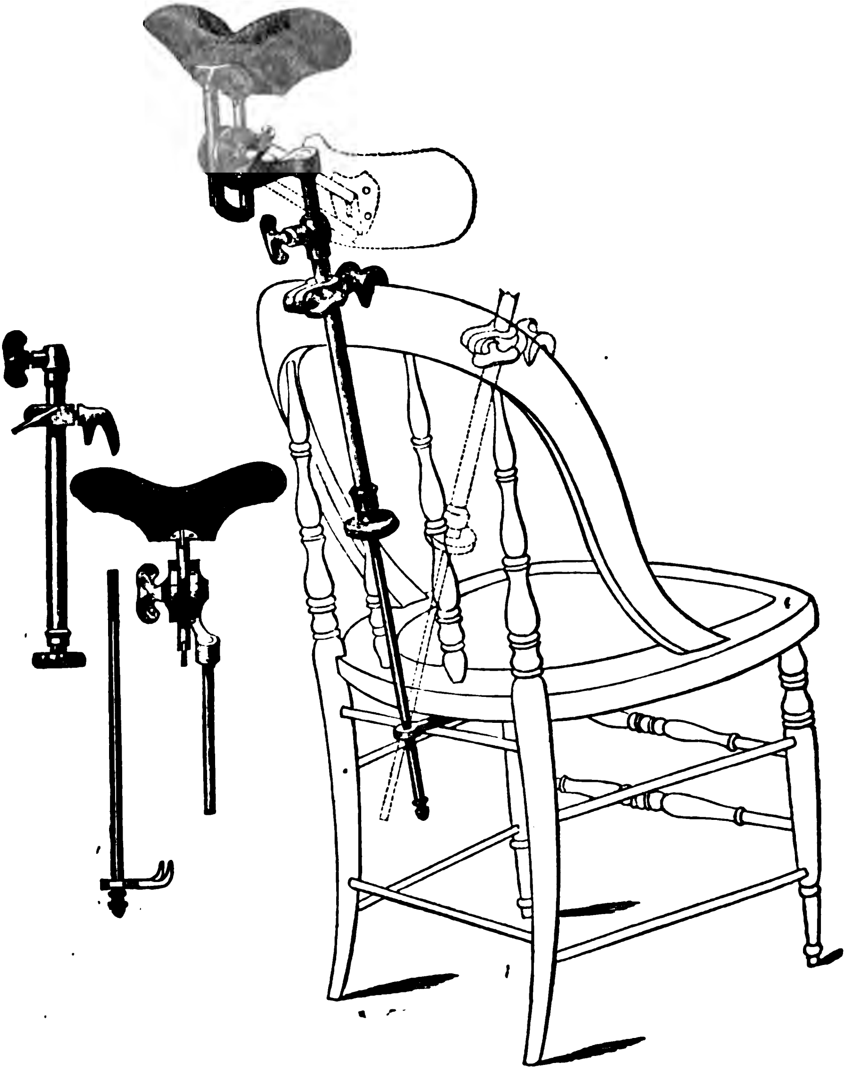
PARIS, 1878.

INTERNATIONAL EXH
AWARDED TO H. D. JUSTI FOR ARTIFICIAL TEETH.
SYDNEY,

SNOWDEN & COWMAN'S

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

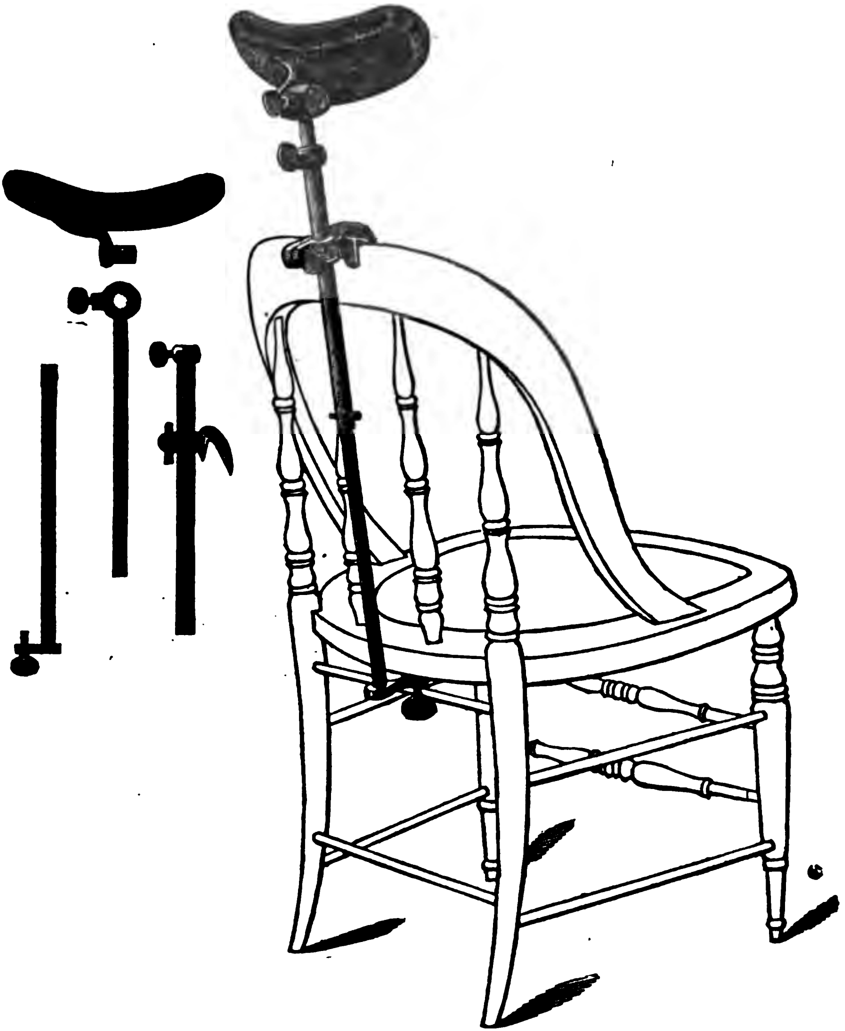
SNOWDEN & COWMAN,

20 West Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

-IMPROVED-

Portable Head-Rest.



This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with the attachment to the chair. It weighs only 4 lbs., and occupies a space only of 13 x 4 inches.

PRICE, $5 00.

SNOWDEN & COWMAN, 9 W. Fayette Street.

The Improved Wilkerson Chair.

Patented November 20, 1877; October 31, 1876. Reissued July 4, 1876; March 19, 1878; June 25, 1878; August 20, 1878; August 27, 1878

PRICES.

In best quality Green, Crimson, or Maroon Plush - - - - -	$180 00
In either color of finest Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Carpet - - - - - - - - -	200 00
In Fancy Upholstering, full Turkish Style, Puffed with Plush, and trimmed with Silk Cord, with Carpet to match - - - - - -	210 00
In Crimson Plain Turkey Morocco or Leather - - - - - -	180 00
In Embossed Turkey Morocco, Tan or Crimson, Puffed with Plain Morocco, edged with Cord, Axminister Carpet on Apron and Foot-Rests -	210 00

BOXING FREE.

For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

AMALGAMS.

Townsend's	$3.00 per ounce
Chicago Refining Co's	4.00 " "
Caulk's Par-Excellent Alloy,	3.00 " "
Standard Dental Alloy,	6.00 " "
Lawrence's	3.00 " "
Arrington's	2.50 " "
King's,	3.00 " "
Sterling Amalgam,	3.00 " "
Chase's Alcohol-Tight,	3.00 " "
Olivers Amalgam,	3.00 " "
" White Amalgam,	5.00 " "

CEMENTS.

Roman Cement, best in the market,	$1 00
Agate Cement, in 1 oz. Boxes,	2.00
" " " ½ "	1.50
Weston's Insoluble Cement, ½ oz.,	1.50
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H. D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
H D. Justis's Acme Cement,	
One oz. Package,	3.00
Half " "	1.50
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	1.00
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.50
" " 1 "	1 00
Caulk's Hydraulic Pebbles, large Pk'ge,	2.00

DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.25
Sam'l S. Whites' No. 1 Improved,	"	2.25
Holdfast Rubber,	"	3.00
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Star Rubber,.	"	3.50
Sam'l S. White's Bow Spring,	"	2.75
Whalebone Rubber,	"	3.00
Sterling Rubber,	"	3.00
Black Rubber	"	2.50

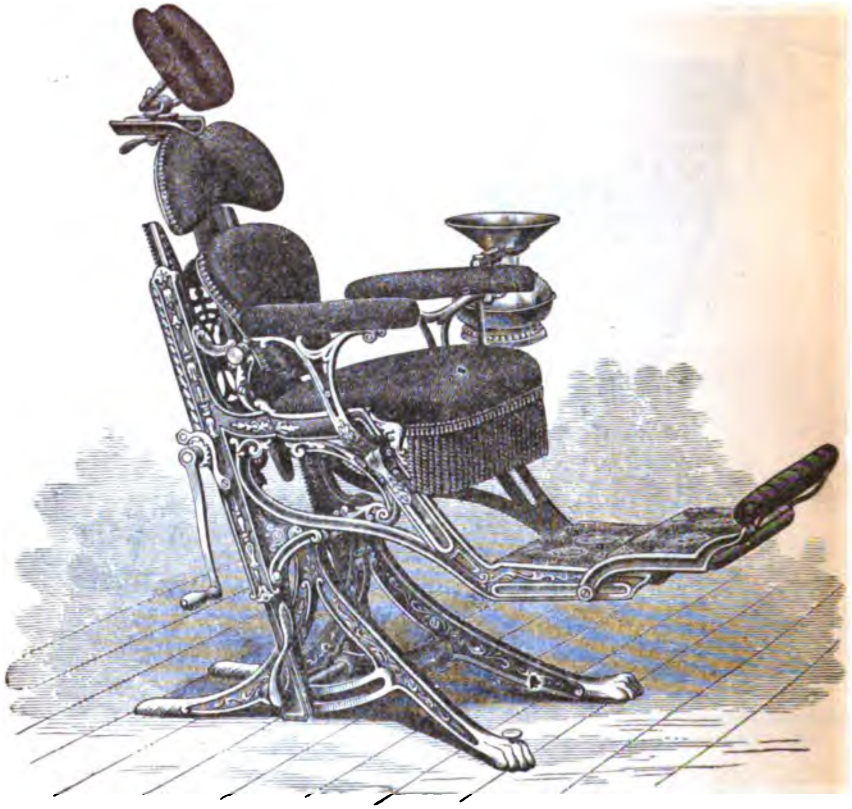
GUTTA-PERCHA.

American Hard Rubber Co's	per lb.,	$2 50
Sam'l S. White's	"	2.50

SNOWDEN & COWMAN.
9 West Fayette Street Baltimore

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush	$130.00
In Real Morocco, Embossed	140.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	150.00
In French Moquet, Boquet pattern	145.00
In same, but puffed with Silk Plush, full Turkish Upholstery	160.00

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

PRICE.

In Corded Upholstery.	$105.00

We supply either style of the Morrison Chair, with or without Casters. When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

GAS APPARATUS.

Surgeon's Case, No. 1, complete	$ 36 25
" " " 2, "	37 50
" " " 3, " (upright)	36 25
" " " 4, " "	37 75
" " " 5, " "	31 25
" " " 6, " "	32 50
Nickel-Plated Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	177 50
Japanned Gasometer and Stand, complete with 500 gallon Cylinder, (filled) Tubing, Inhaler, etc	139 50
Boxing, extra	5 00

Parts of Gas Apparatus.

Morocco Case, Velvet Lined, Nickel-Plated Mountings	$ 10 00
Upright " Leather Covered, " " "	10 00
" " Japanned, " " "	5 00
Gas Bag, 4½ gallons of capacity	2 25
" " 7 " "	3 50
Stand for 100 gallon Cylinder	4 50
" " 500 " "	7 00

GAS.

Cylinder with 100 gallons of Gas	$ 12 50
" " 500 " "	35 00
Refilling 100 gallon Cylinder	2 50
" 500 " " 2½ cents per gallon, say	12 50

We pay no freight on Cylinders either way.

CORUNDUM WHEELS.

	¼ inch.	⅜ inch.	½ inch.	⅝ inch.	¾ inch.	1 inch.
No. 00	$ 6					
0	7					
1	10	$ 12	$ 15	$ 17	$ 20	$ 30
2	14	15	17	20	25	35
3	18	20	25	30	35	40
4	22	25	30	35	40	50
5	28	30	40	45	50	60
6	35	45	50	60	70	85
7	50	60	70	85	1 00	1 30
8	85	1 10	1 30	1 50	1 75	2 25
9	1 25	1 50	1 80	2 25	2 70	3 50
10	2 00	2 50	3 00	3 25	3 50	4 50
11	2 75	3 50	4 25	5 00	5 75	6 25

Articulating Wheels, 30 cents each.

NITRATE OF AMMONIA.

5 pounds, including Stone Jar	$ 2 00
10 " " " "	3 75
20 " " " "	7 00
Pound	35

Boxing extra.

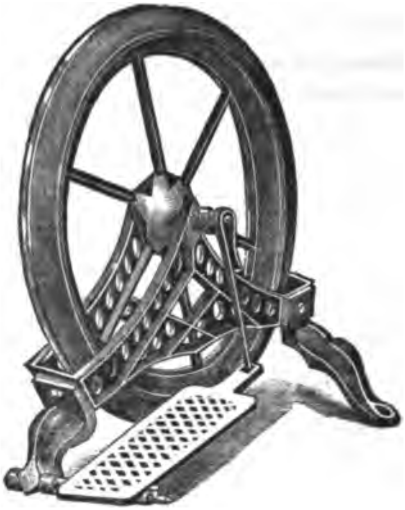
DENTAL PLASTER.

Barrel	$ 3 50
Half-Parrel	2 50
Quarter-Barrel	1 60
Three-Peck Can	2 00
Sixteen-Quart Can	1 45
Twelve-Quart Can	1 15
Six-Quart Can	70

Boxing and Porterage extra.

SNOWDEN & COWMAN'S

Diamond Fly Wheel,



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detached, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - - - - ***$8.00***

SNOWDEN & COWMAN,

No. 9 W. Fayette Street,

BALTIMORE, MD.

Snowden & Cowman,

9 W. Fayette Street, Baltimore, Md.

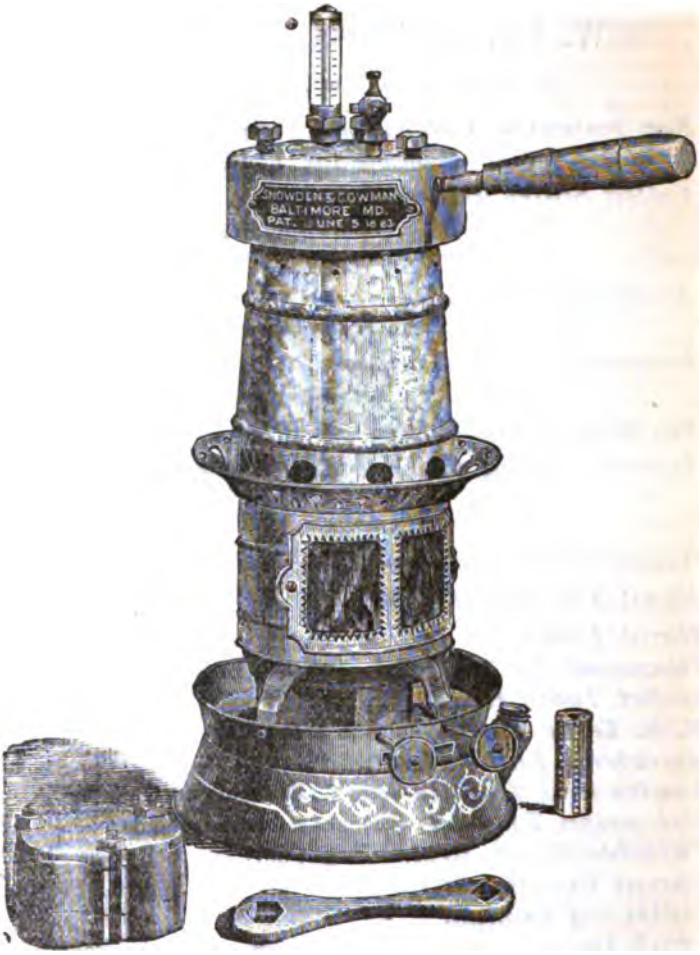
Manufacturers of the following articles :

New Patented Vulcanizer, complete for Kerosene or Gas, with two Malleable Iron Flasks,	18 00
United States Lathe—Long Spindle,	16 00
" " " Short Spindle,	16 00
" " " Stand and Cord,	12 00
American Lathe,	15 00
" ' Extra Large Driving-Wheel,	16 00
Diamond Lathe—Complete,	14 00
" " Fly Wheel,	8 00
Fly Wheel, No. 1, (New)	8 00
Portable Hand or Foot Lathe—Complete,	6 00
" " " " Without Foot Attachment,	5 50
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamond Lathe Head—Polished Brass,	6 00
Socket Table Head,	5 00
U. S. Table Head—holes in base to screw to table,	4 00
American Lathe Head, " " " "	4 00
Ladles and Handle—two Ladles and one Handle,	75
Extension Brackets—weight only five pounds,	6 00
Portable Head-Rests—weight only four pounds,	5 00
Patent Portable Head-Rest, full nickel plated,	10 00
Soldering Lamps,	90
Flask Press, No. 1, well made and very strong, improved	1 50
" " No. 2, new,	1 50
Ingot Moulds—broad base with handles, No. 1	2 25
" " " " No. 2	2 75
" " " " No. 3	3 25
Bailey's Moulding Flasks,—per set of 2,	75
Students Case—with 8 medicine bottles,	8 00
" " " 6 " " and lamp,	8 50
Britannia Impression Cups—long handles, various styles and 27 sizes—each,	

☞ *We make no charge for Boxing any of the above goods.*

FOR SALE AT ALL DENTAL DEPOTS

SNOWDEN & COWMAN'S
NEW PATENTED VULCANIZER.



Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

Gas Stove.

TO THE DENTAL PROFESSION.

NEW PATENTED VULCANIZER.

In offering our New Patented Vulcanizer to the Dental Profession, we do so with the knowledge that it far supersedes anything of the kind now before it in strength, utility, durability and simplicity.

The boilers are made of four pound copper and will stand a steam pressure five times as great as it is required to vulcanize at 320°. They are tinned inside, which prevents the copper from corroding, if kept clean. The Vulcanizers are made larger than the ordinary ones, so as to take any flask in the market. The bolts are so arranged that the pressure from them comes directly on the packing and makes it steam tight.

The movements of unloosening the top and taking the Vulcanizer apart are positive and quick. The movement of the collar in unloosening is only one-sixth of the circumference of the boiler; it is from left to right; and is guided by lugs or stops, thereby doing away with the old method of unscrewing top from boiler, which often gives trouble, owing to the contraction of the metal if allowed to get cool.

NEW SAFETY VALVE.

After long experience in Safety-Valves, Steps, Blow-offs, &c., we have adopted what we consider a safe device. It consists of the seat, or body, stem, lever and weight.

If at any time the valve should leak, a slot will be found in the top of the stem to fit a screw driver, by which the stem can be turned around several times and grind itself tight again.

EXTRACTS FROM TESTIMONIALS.

—It surpasses any I have ever used or seen.—**Howard W. Hoopes, D. D. S.**

—It is in our opinion the best in the market. For neatness and easy working, it is a gem.—**Drs. Williams and Pennington.**

—Your new Vulcanizer has been in use in my laboratory since first introduced and has given the greatest satisfaction.—**C. E. Duck, D. D. S.**

—It gives me more satisfaction than any I have yet used. In strength, durability, easy and quick working of all its parts, it excels.—**Thomas H. Davy, D. D. S.**

—I have used your Vulcanizer regularly since its first introduction and it works to my entire satisfaction. I consider it the best, safest and simplest. I am sure that any dentist who sees its easy workings will claim all I do for it.—**Bernhard Myer, D. D. S.**

—For economy of time and ease of manipulation, it is superior to all I have seen or used. The facility of closing, cooling without resort to water, and opening, will be recognized and appreciated by all as great improvements.—**C. E. Bierbower, D. D. S.**

—Your Vulcanizer is the best and strongest I have used or seen. The advantages of opening and closing are very simple and efficient, and with less trouble than any in the market, and I consider it a great acquisition to the mechanical department of dentistry.—**Wm. B. Finney, D. D. S.**

DIRECTIONS FOR USING.

VULCANIZER.—Screw the handle into the cover, loosen the three bolts on the top, turn the handle from left to right, lift the cover and take off the cap. In returning the cap let the two marks on the cap and ring come opposite each other.

☞Sprinkle rubber packing with powdered Soapstone before putting cap on.

SAFETY VALVE.—Always keep the lever upright in taking the Vulcanizer cover off or putting it on, and until the cold air is driven out of the boiler, then lower lever, placing weight about mid-way so as it will not blow off steam at 320°.

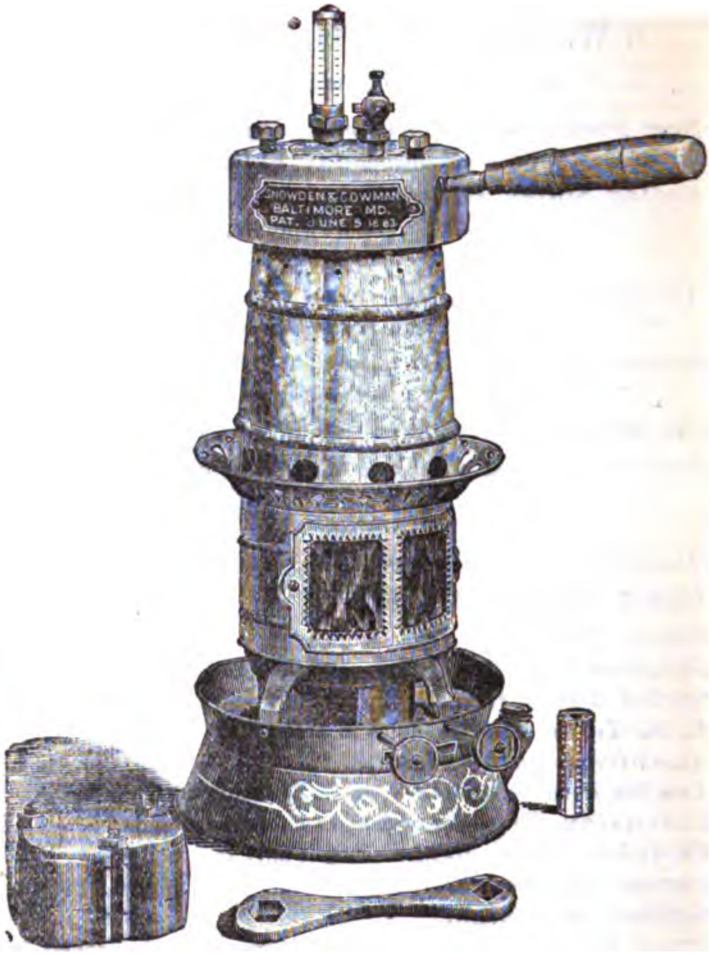
KEROSENE STOVE.—Keep the oil reservoir well filled. Before lighting the stove the first time allow it to stand about fifteen minutes, until the wicks are thoroughly saturated, trim them evenly and take a small clip off of the corner of each wick, fill the top tank with cold water, and the stove is ready for use.

The wicks must fill out the wick-tubes. Be careful to use the right size. Keep the wick-tubes clean, and the wicks, when not lit, turned down below the top of the tubes, so that the oil will not run down the outside of them. Keep the perforated tin clean and the wind from blowing on the stove while it is burning.

Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN'S

NEW PATENTED VULCANIZER.



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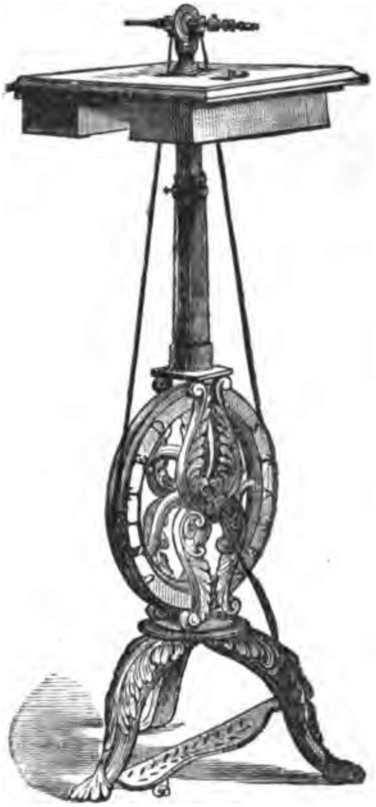
Manufactured by Snowden & Cowman, 9 W. Fayette Street, Baltimore, Md.

UNITED STATES LATHE.



We offer to the dentist a most complete FOOT LATHE for grinding teeth and polishing plates.

It has been gotten up in a superior manner, great care having been taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

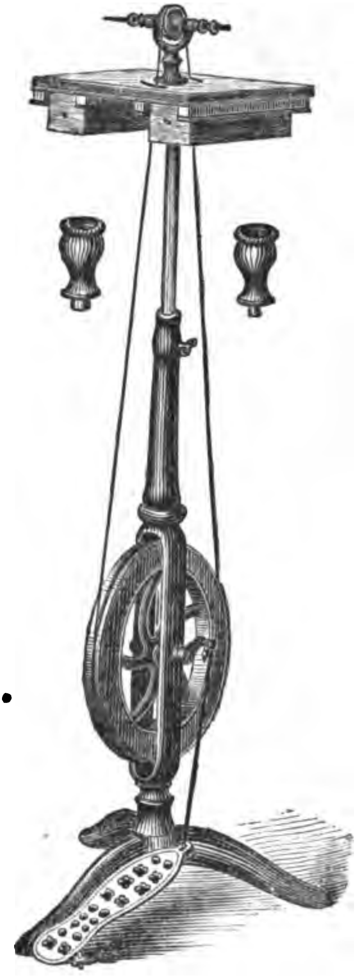
It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut, - -	$16 00
“ “ “ “ Long “ - - -	16 00
“ Stand only, including Cord and Coupling, - -	12 00

SNOWDEN & COWMAN,

No. 86 West Fayette Street, Baltimore.

American Lathe.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*. It has a solid spindle—one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated Eleven inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

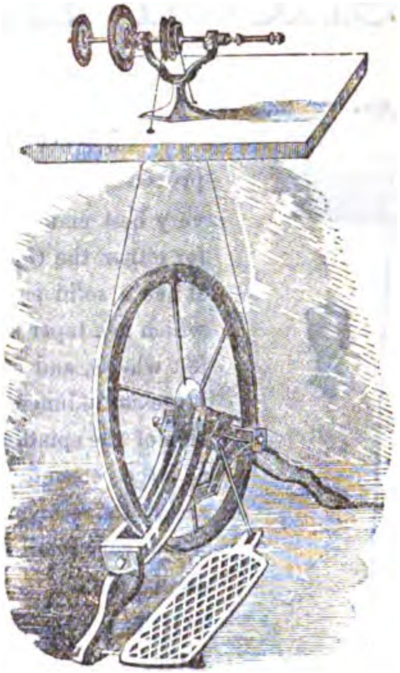
☞ We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, -	$15 00
" " with Socket Spindle, with two Chucks,	15 00
" " with Extra Large Driving-Wheel,	16 00
" Chucks, extra, - - - -	15

☞ No charge for Boxing.

SNOWDEN & COWMAN,
9 W. Fayette Street, Baltimore.

The Diamond Fly Wheel and Lathe Head.



DIAMOND FLY WHEEL.

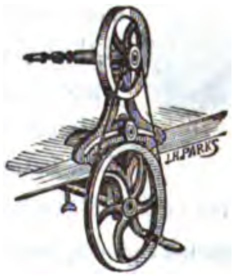
This fly-wheel is 18 inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set anywhere and runs very steady.

PRICE..$8 00

DIAMOND FLY WHEEL AND HEAD.

Complete, boxed..PRICE $14 00

QUADRANT FLY WHEEL LATHE.

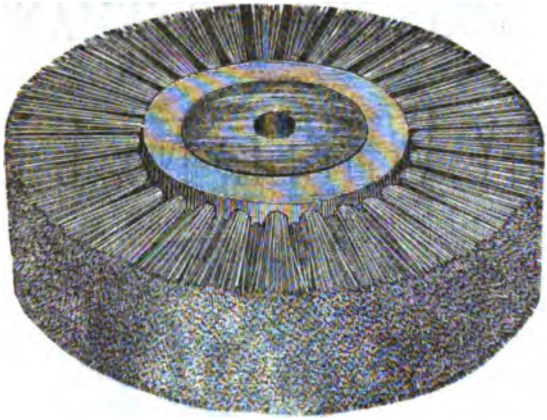


By means of the quadrant, the spindle can be raised from, or lowered to the table, and thrown from or nearer to the operator. The cord is tightened by slots, and the lathe is silent; the spindle is of the best quality of steel, with brass washers and two chucks complete. Weighs only four pounds.

PRICE..$4 50

SNOWDEN & COWMAN, 86 W. Fayette St., Baltimore.

NOVELTY BRUSH WHEELS.



STRAIGHT BRISTLES (as per cut.)

No.	3	1 Row	Stiff	Bristles,	1¼	inches	diameter,	each	$0.10
"	4	1	"	"	1⅜	"	"	"	.14
"	1	2 Rows	"	"	1½	"	"	"	.15
"	2	2	"	"	1½	"	"	"	.15
"	5	2 "	"	"	1⅝	"	"	"	.18
"	6	2 "	Medium	"	1⅝	"	"	"	.18
"	8	2 "	"	"	1⅝	"	"	"	.18
"	10	2 "	Soft	"	1⅝	"	"	"	.18
"	7	2 "	"	"	1⅝	"	"	"	.18
"	9	2 "	"	"	1⅝	"		"	.18
"	11	2 "	"	"	1⅞		"	"	.20
"	14	2 "	"	"	1⅞		"	"	.20
"	13	2 "	Medium	"	1⅞	"	"	"	.20
"	19	2 "	Soft	"	2⅜	"	"	"	.25
"	22	2 "	"	"	2⅜	"	"	"	.25
"	21	2 "	Medium	"	2⅜	"	"	"	.25
"	20	2 "	Stiff	"	2⅜	"	"	"	.25
"	18	3 "	Soft	"	2	"	"	"	.28
"	17	3 "	Stiff	"	2	"	"	"	.28
"	26	3 "	Soft	"	2¼	"	"	"	.34
"	50	3 "	Soft	"	3	"	"	"	.37
"	80	4 "	"	"	4	"	"	"	.44

CONVERGING BRISTLES.

No.	16	3 Rows	Medium	Bristles,	2⅛	inches	diameter	each	$0.28
"	15	3 "	Stiff	"	2⅛	"	"	"	.28
"	24	3 "	Medium	"	2¼	"	"	"	.34
"	23	3 "	Stiff	"	2¼	"	"	"	.34
"	28	4 "	Medium	"	3	"	"	"	.44
"	27	4 "	Stiff	"	3	"	"	"	.44

STRAIGHT BRISTLES—LONG SHANKS.

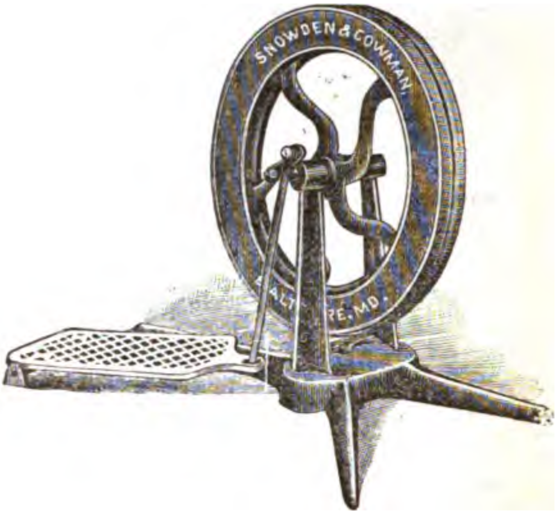
No.	52	2 Rows	Stiff	Bristles,	1⅝	inches	diameter	each	0.18
"	66	2	"	"	1⅞	"	"	"	.24

CUP-SHAPE BRISTLES—LONG SHANKS.

No.	51	2 Rows	Stiff	Bristles	1⅝	inches	diameter	each	0.18
	65	2 "	"	"	1⅞	"			.24

SNOWDEN & COWMAN'S

FLY WHEEL, No. 1, New.


SNOWDEN & COWMAN.
BALTIMORE, MD.

This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, The wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

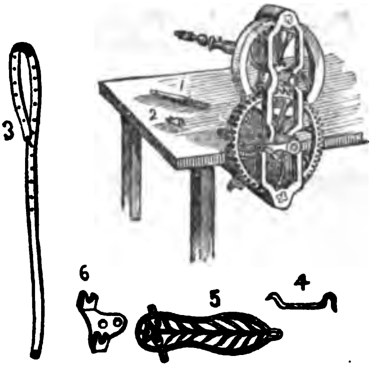
Price Boxed, - - - - - - **$8.00**

SNOWDEN & COWMAN,

No. 9 W. Fayette Street.

BALTIMORE, MD.

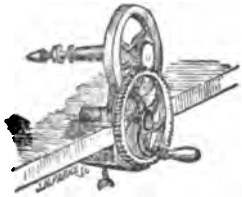
Portable Hand or Foot Lathe.



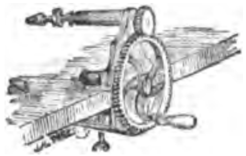
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$6 00
Without Foot Attachment, - - -	5 50

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

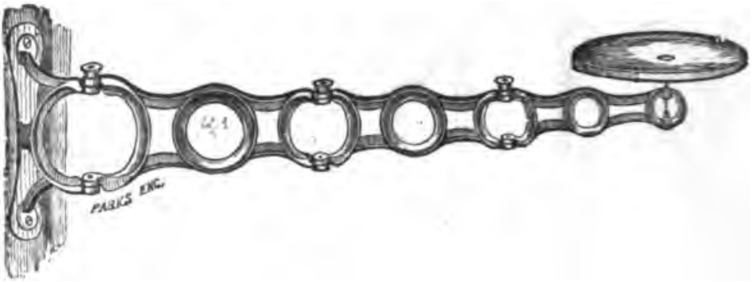
HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN,

No. 86 West Fayette, Baltimore.

Snowden & Cowman's Extension Bracket.



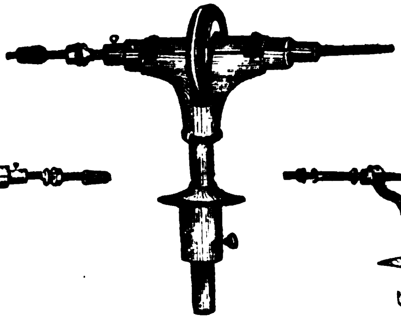
This Bracket is made of iron painted in imitation of walnut, or bronzed When straight out is very stiff, has a thumb-screw at each joint to keep it in any position it may be placed, and folds up close. It only weighs 5 pounds.

Price, Round Table as per cut, - - - - - - - - $6 00.

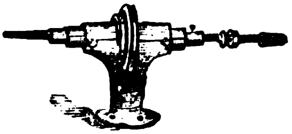
Square " with drawers. - - - - - - - - 8 00

TABLE HEADS.

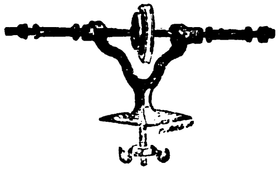
A.



B.



C.



A.—SOCKET HEAD.—**The socket screws to the** table, has **a set screw in the lower part, the head slides four inches to tighten** the strap **or vary** the height from the table..................................PRICE **$5 00**

B.—U. S. LATHE HEAD, **with holes in the base to screw** to any **table.**

PRICE—Short Spindle (as per cut **B**)..................$4 00

" Long Spindle.................................. 4 00

C.—DIAMOND LATHE HEAD.—The head, pulley, and spools, which retain the wheels and brushes, **are of Brass. The spindle is of the** best unannealed hammered steel, **and of the size to suit the holes in the** wheels

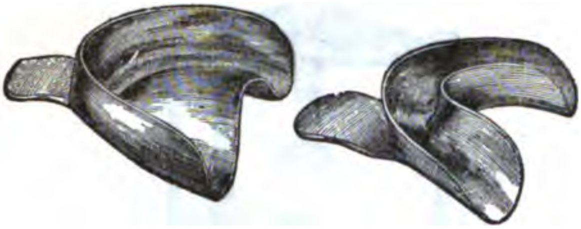
PRICE.....................................**$6 00**

SNOWDEN & COWMAN **86 W. Fayette St., Baltimore**

BRITANNIA IMPRESSION CUPS,

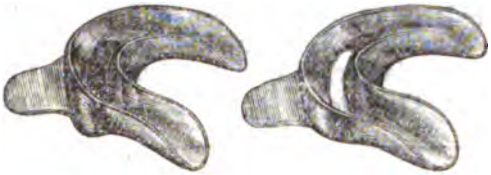
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



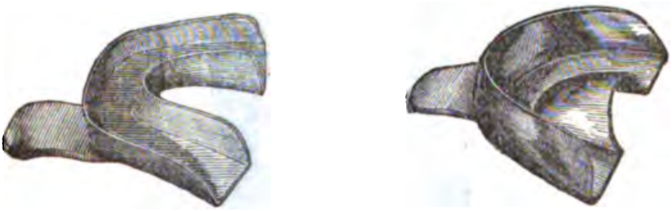
UPPER, Nos. 0, 1, 2, 3, 4, 5, 6, 7.—(No. 1 is the largest size.
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.

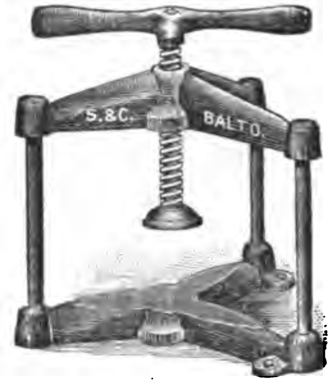


PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................Each....................25cts

SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

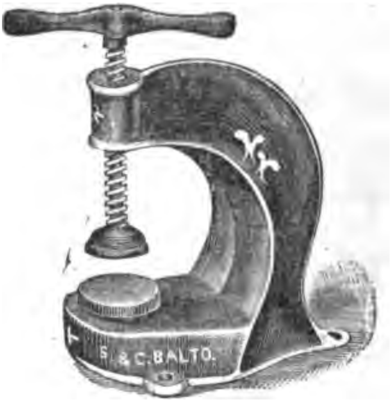
SNOWDEN & COWMAN'S
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Style.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price - $1.50

CHARLES ABBEY & SONS,
MANUFACTURERS OF
DENTISTS' FINE GOLD AND TIN FOIL.

The attention of Dentists is invited to our FINE GOLD FOIL. which is prepared under our constant personal supervision. Our Nos. are 4, 5, 6, and 8.

We are also manufacturing an ADHESIVE FINE GOLD FOIL, Nos. 4, 5, and 6.

ALL our Gold Foil is manufactured from ABSOLUTELY PURE GOLD, prepared expressly for the purpose, with great care, by ourselves.

ADDRESS— **CHARLES ABBEY & SONS, Philadelphia**

LUKENS & WHITTINGTON,
ESTABLISHED 1866.
MANUFACTURERS OF
DENTAL INSTRUMENTS
And Dealers in Dental Supplies,
WHOLESALE & RETAIL,
626 RACE STREET,
PHILADELPHIA, PA.

Jacob J. Teufel & Bro.
—DENTAL—
FORCEPS
A SPECIALTY.
MEDAL AND DIPLOMA AWARDED BY THE
Centennial Commission, 1876.

114 South Tenth Street,
PHILADELPHIA.

All Our Forceps are Warranted.

Morrison Bros.,

NASHVILLE, TENN.

—Keep a Full Stock of—

White's and Justi's Teeth,

—Also—

SIBLEY, WILMINGTON AND MORRISON

$1.00 Teeth.

Every Leading Brand of

GOLD, AMALGAM, and CEMENTS

Kept Constantly on Hand

—THE ATTENTION OF—

Western and Southern Dentists

Is Called to Our Large Stock of

Instruments and Materials

Of all Reliable Manufacturers

Careful Attention Given to the Smallest Order.

—PUBLISHERS OF THE—

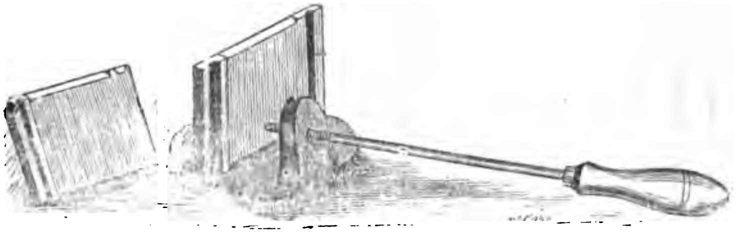
"DENTAL HEADLIGHT,"

A Quarterly Journal Devoted to the Interests of the Dental Profession.

Subscription Fifty Cents.

SNOWDEN & COWMAN'S

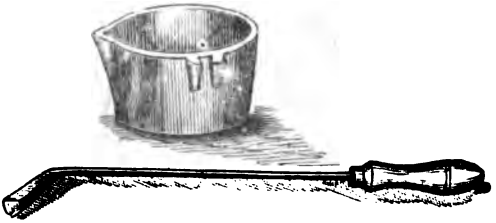
INGOT MOULDS



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Ladles and Handles.



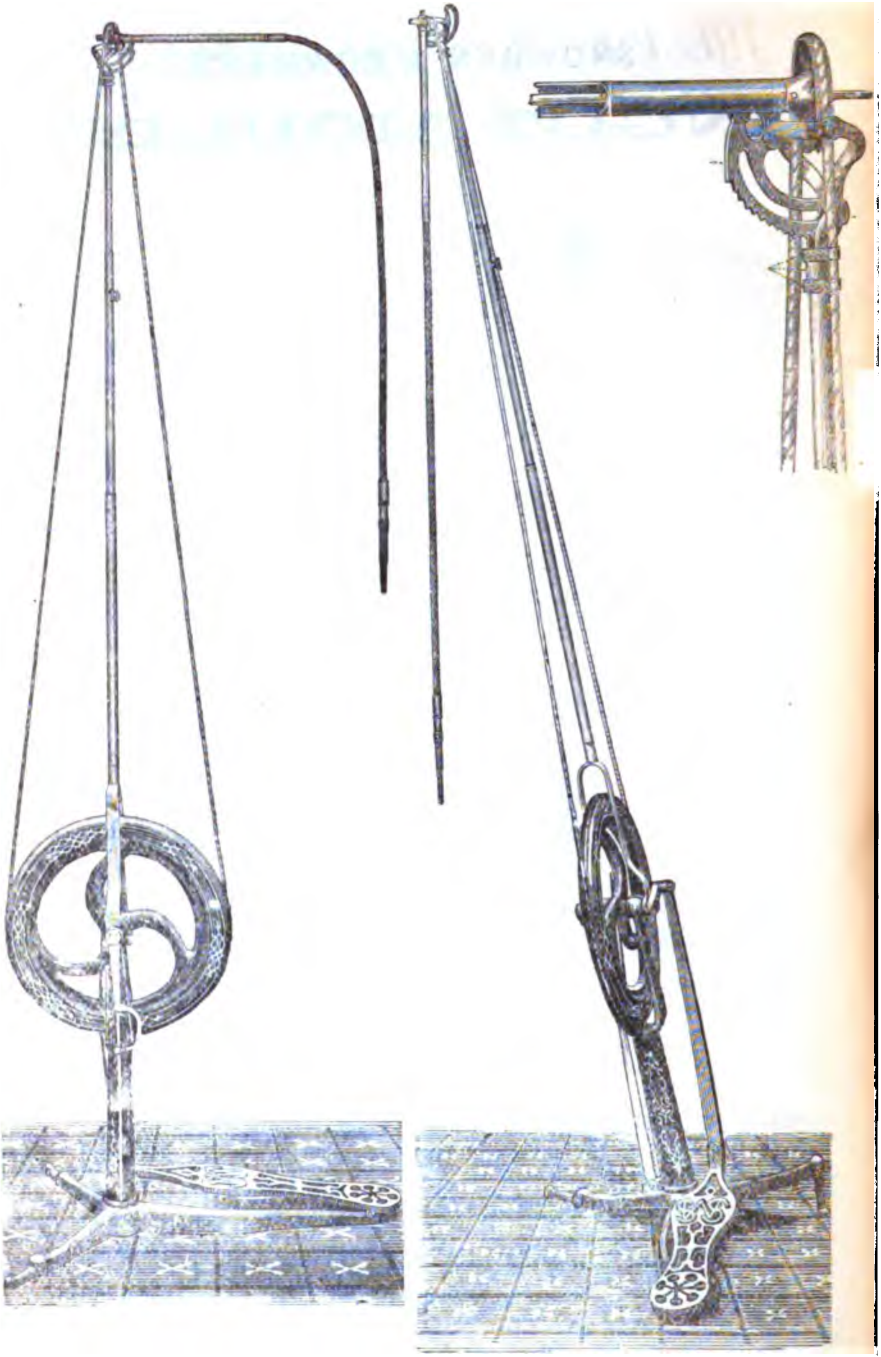
We make three sizes of Ladles; one handle will fit each Ladle, and i removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
Nos. 2 and 3 Ladles, without handle, each	25
No. 1 large " " " "	40
Handles of wrought iron, each	25

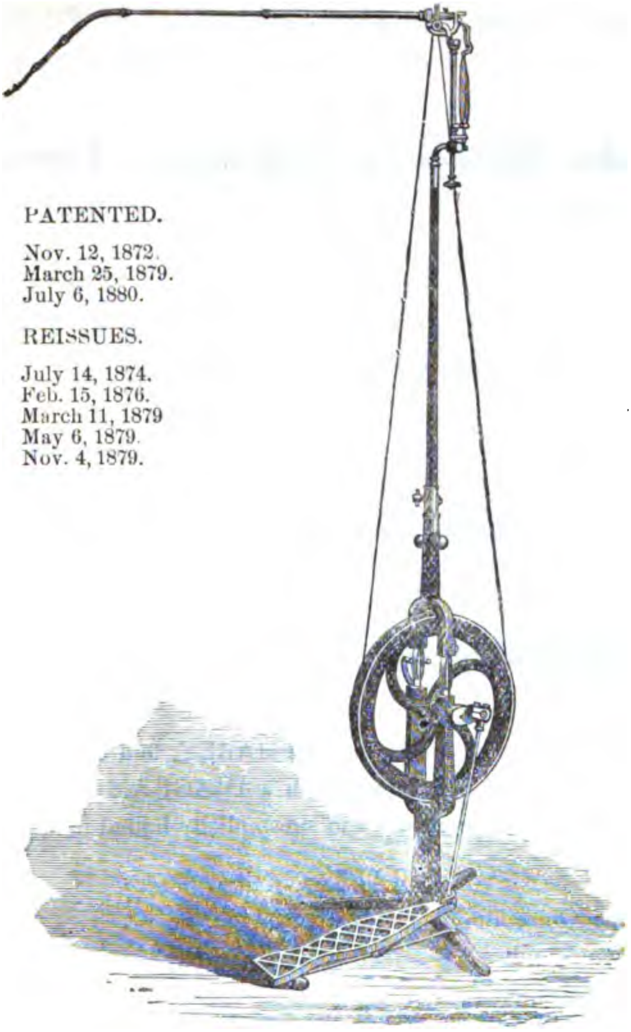
SNOWDEN & COWMAN,
No. 86 W. Fayette St. Baltimore.

THE S. S. WHITE IMPROVED DENTAL ENGINE.



For Sale by Snowden & Cowman, 9 W. Fayette St., Baltimore, Md.

THE JOHNSTON DENTAL ENGINE.



PATENTED.

Nov. 12, 1872.
March 25, 1879.
July 6, 1880.

REISSUES.

July 14, 1874.
Feb. 15, 1876.
March 11, 1879
May 6, 1879.
Nov. 4, 1879.

PRICES.

Engine	$40.00
Boxing	.75

For Sale By SNOWDEN & COWMAN,
9 West Fayette Street, Baltimore, Md.

JOB PRINTING.

Having a Printing Department connected with our Establishment,
we are prepared to execute orders for various kinds
of Printing, such as

Cards, Billheads, Statements, Circulars,

LETTERHEADS, NOTEHEADS, ENVELOPES, ETC.

Case Books Made To Order,

Book and Pamphlet Work a Specialty.

SNOWDEN & COWMAN,

No. 9 West Fayette Street.

SNOWDEN & COWMAN'S

DENTISTS' CASE BOOKS,

For Recording all Operations in Dentistry,

WITH

TITLE PAGE, INDEX OR ALPHABET, and the pages numbered, printed on fine paper, with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book, ...	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

☞TRADE SUPPLIED.

SNOWDEN & COWMAN,

9 West Fayette Street, Baltimore, Md.

FOUNDED 1860.

GIDEON SIBLEY,

TRADE GS MARK.

Manufacturer of Manufacturer and Dealer in

Artificial Teeth and Dentists' Materials.

THIRTEENTH AND FILBERT STS.
PHILADELPHIA, PA.

DENTISTS!

DON'T READ THIS!

unless you want to economize in time, and consequently save money. To accomplish this result you must have the best Teeth in the market, and they are

Gideon Sibley's Improved Artificial Teeth.

From this claim we except no make of Teeth, foreign or domestic, and it is daily substantiated by the unsolicited testimonials of thousands of Dentists, many of whom use these Celebrated Teeth exclusively. Sample sets, $1.00. For sale by all dealers. Sample cards and abridged price list free by mail. All orders for Teeth and Dental Supplies will receive prompt and careful attention.

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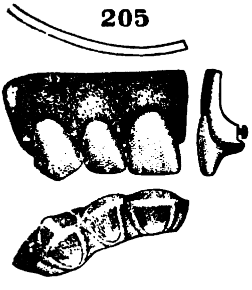

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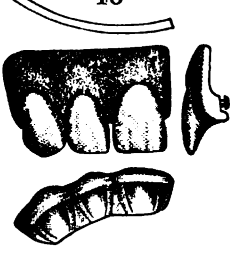

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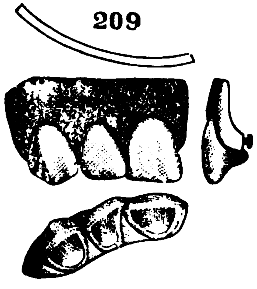

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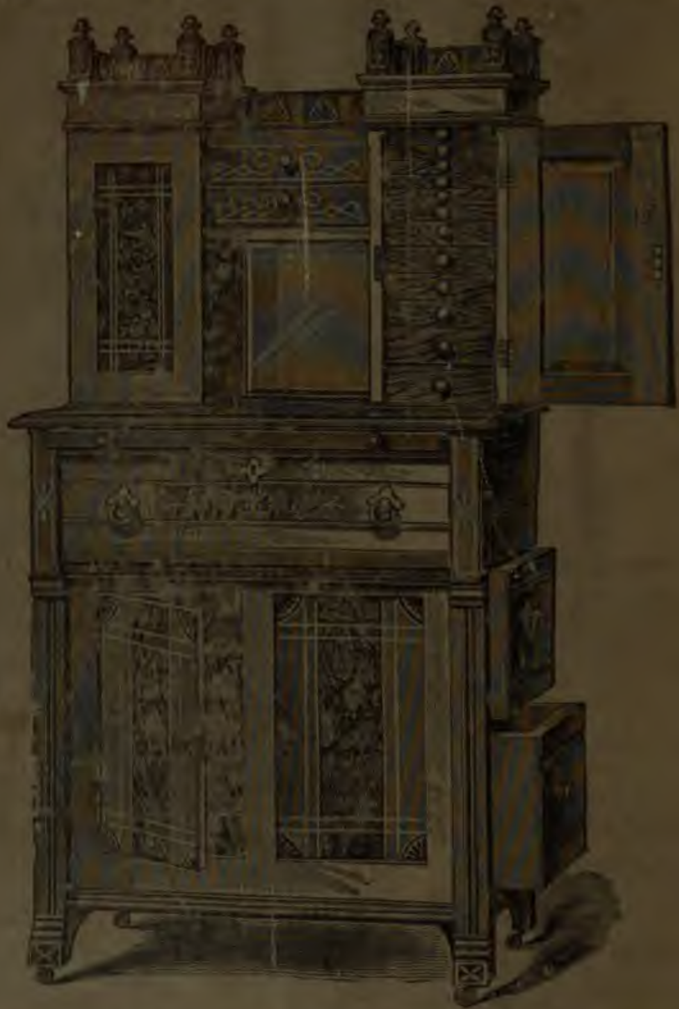
Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7¼x7½; 6 of these are ½ inch deep; 4, 1½ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10½x12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10x10. The lower portion contains one drawer in front, 25x16, 5 inches deep, with slide drawer over it 25x10¼ by ¾ inches deep, lined with felt cloth. At one end, 2 drawers, 14¼x13½, 9 inches deep. In front is a closet, 20x16, 12 inches deep, with shelf.

PRICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	50.00.
" " Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

BRANCH: 20 Circle Street, Indianapolis Ind.

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